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FEBRUARY 1938



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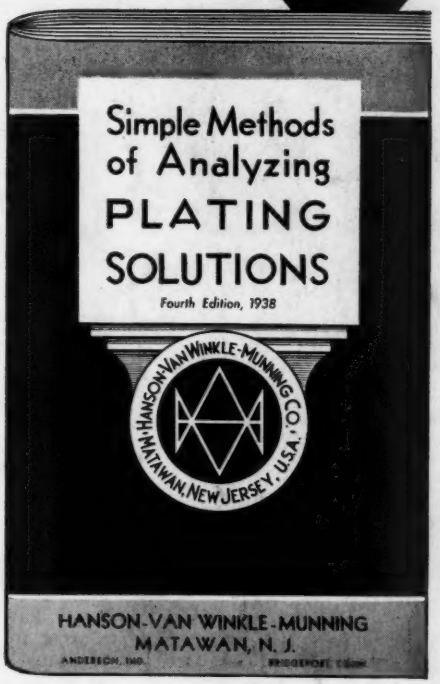


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# The MONTHLY REVIEW

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## *Editorial*

Copies of the proposed Revision of the Constitution have been mailed to all Branch secretaries. The suggested changes, additions, and corrections should be frankly discussed at the Branch meetings of the Society. In doing so, we should keep in mind the growth and progress of the A.E.S. in recent years, and that we have to compete with organizations similar to our own that do not hesitate to claim everything in sight as their territory when and where the occasion arises. The Committee members carefully considered each item before the copies were distributed, and feel that they have placed before the membership something more up-to-date than the previous Revision without going to extremes in matters in which, in past years, we have not all been in complete accord.

The copies sent out are not the last word, but are meant for discussion by the members. There may be items that will cause differences of opinion, but we believe a careful and conscientious study of these portions of the proposed Revision should not prove a stumbling block but should receive every consideration before being rejected by the membership.

It is possible, also, that the Committee will be asked to explain more fully the reasons why certain changes are deemed necessary. We listened to a discussion recently by the members of one of our branches at which time the proposed increase of per capita tax was mentioned. The question was asked "What will the extra seventy cents per year per member be used for?"

We could give many answers to this question, such as securing better speakers for branch meetings and paying their expenses; sending some of these occasionally to our more distant branches such as Los Angeles, San Francisco, Montreal, etc.; producing a better publication by increasing the size of the REVIEW so that more up-to-date material can be published, and enlarging its usefulness in other respects. It will also be necessary at some future period to appoint regional representatives in certain sections to increase interest in the A.E.S. These should at least have their travelling expenses paid as their duties would consist of helping some of our weaker branches to increase their membership and thus become a more potent influence in the community they seek to serve.

Other questions will undoubtedly arise concerning the proposed Revision. This being the case, the Committee will be glad to receive suggestions, corrections, and constructive criticisms, so that when the time comes for action at the Milwaukee convention each delegate will be so thoroughly informed on the subject that there will be no time wasted at the final business session, which even without this added item of importance, is always crowded with details connected with the welfare of the Society.

# Coloring *of* Cadmium

*By WM. J. ERSKINE*
National Lock Company, Rockford, Ill.

**Read at Chicago Banquet January 15, '1938**

## INTRODUCTION

THE desire for a rich warm brown color on cadmium which would prove suitable for use on ornamental work such as furniture trim prompted a check through literature to determine the most logical bath. Needless to say, the number of baths suggested was extremely limited, however, the following were recommended as being the most promising:

## BATH COMPOSITION

| *Bath No.* | *Composition* | *Remarks* |
|---|---|---|
| 1. | Copper Nitrate.....20 grams<br>Potassium Permanganate. 5 grams<br>Water..... 1 liter | Light shades of brass yellow to light brown. Browns were iridescent. Approximately 10 minutes was required to obtain brown. |
| 2. | Cadmium Nitrate.....120 grams<br>Potassium Permanganate.160 grams<br>Water.....1 liter | Color changes from greenish yellow to brownish green from then on to reddish brown. Deposit is not uniform. Cadmium dissolves quite fast. Increasing the cadmium nitrate content of the bath gives deeper shades of brown. |
| 3. | Copper Nitrate.....30 grams<br>Potassium Permanganate.10 grams<br>Potassium Chlorate.....60 grams<br>Sodium Thiosulphate.....30 grams<br>Water..... 1 liter | This bath produces a fairly even shade of brown which has a distinct lavender cast. |
| 4. | Potassium Chlorate.....15 grams<br>Copper Sulphate..... 5 grams<br>Water..... 1 liter | Baths of this type containing copper and chlorate and give loosely adherent black deposits and were very quick acting. |

## BATH CHARACTERISTICS

The above baths were tried out with variations of temperature and concentration and color ranging from brassy yellow through iridescent shades to reddish brown and lavender were

obtained. Unfortunately these deposits were usually so flecked and spotted that they presented little possibility for a uniform ornamental finish. Since iron nitrate and sodium thiosulphate produced reddish brown shades on brass, it, as well as golden antimony and caustic soda and similar immersion dips, was tried with cadmium but without success. It was then evident that if a brown was to be used on cadmium more work would have to be done to develop it. Inasmuch as cadmium oxide is reddish brown to brownish black and the sulphide yellow to dark orange, both pleasing colors, either one should present possibilities for a coloring by immersion. It was decided to try the oxide first as a means of producing the desired color. A number of different oxidizing agents were used. Among those tried were Nitric Acid, Potassium Chlorate, Potassium Permanganate, Sodium Peroxide, Hydrogen Peroxide, Sodium Thiosulphate and Potassium Dichromate. In all cases, either in a hot or cold bath very little color was produced. The oxidizing agents were then tried in conjunction with one another and in pairs of two or more. It was in this manner that the Potassium Dichromate-Nitric Acid bath was developed.

| | |
|---|---|
| Potassium Dichromate | 1 oz. |
| Nitric Acid 36°Be′ | 1/2 oz. |
| Water | 1 gal. |
| Temperature | 140-160° |

This bath showed by far the most promise. Inasmuch as color was evident almost as soon as it was possible to put piece in and out of the bath. The deposits were uniform in color and started with a pale yellow gradually getting darker until they reached a rich warm brown color such as you might expect after looking at a sample of powdered cadmium oxide. This took about two minutes. Color became dark and redder on continued immersion. Care had to be exercised not to hurry the dip too much as to do so by adding an excess of nitric acid meant non-adherent deposits. Excess amounts of potassium dichromate seemed to have a less marked effect. Light to medium shades were very easy to reproduce but the dark reddish ones required more patience and manipulation. Time for the dark shades required from 6-8 minutes with a bath temperature from 140-160° F.

Operations were carried out in a 20 gallon earthenware crock heated by placing same in a tub of hot water into which was injected live steam. Best deposits were obtained when work was plated in a bright bath and was relatively free of spots and stains. Sequence of operations was

1. Cadmium plate to a thickness of approximately 0.0002".
2. Dry off in dry hardwood sawdust.
3. Oxidize in Potassium Dichromate-Nitric Acid bath.
4. Rinse in clean water.
5. Dry in hot air centrifugal dryer or hardwood sawdust.
6. Relieve highlights with a fast cutting composition such as Tripoli Ends.
7. Tumble in sawdust to remove any excess composition.
8. Lacquer with a good clear metal lacquer.

It was found that the oxidizing solution worked much more uniformly when work was taken directly to the bath without any burnishing, buffing or scratch brushing operations. Nichrome baskets proved to be the most suitable for handling the work during the oxidizing operation, and the centrifugal dryer proved most satisfactory for drying after oxidizing.

In operating the bath, frequent though small additions of nitric acid must be made and occasional additions of dichromate. When the bath becomes slow and logy after continued use, it is necessary to discard and make up a fresh solution. The cadmium oxide film produced from this bath is tough and durable if the nitric concentration is not too high. Good deposits are capable of withstanding sharp bends and deformations without injuring adherence of same.

The fact that brown had an appeal to the trade was evidenced by the fact that one of the salesmen picked up a piece from the Laboratory and showed it to some of his Southern customers and took orders for some 30,000 pieces even though the finish had not been finally approved by the Laboratory, naturally to the chagrin of those concerned.

The cost of operating the bath is exceedingly small as the concentration is weak and Potassium Dichromate and Nitric Acid cost but 9 cents per lb. and 6 cents per lb. respectively. Operators of the bath generally retain a little of the old solution

in the crock when making up a fresh bath. The old stock helps to stabilize the new bath.

### EXPOSURE TESTS

Outdoor exposure tests carried out without lacquer on the specimen showed no change in color of the deposit on comparison with sample kept away from light even after 6 months, except that highlights which were relieved to show cadmium showed some stain and tarnish.

Samples exposed to weather conditions over a two year period still showed the brown film although it was becoming exceedingly faint. Strong sunlight does not destroy the color as generally happens when samples of brass are exposed without lacquer.

Oxidized samples on which one-half of the panel was treated prior to submitting to salt spray test showed that same had much more resistance than the cadmium itself. This, of course, might be expected of a stable oxide film. Likewise parts subjected to the humidity cabinet 100% humidity at 100° F. showed much more marked resistence.

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## NORTON ABRASIVES

# *Automatic* Polishing *and* Buffing *of* Copper, Nickel Silver *and* Stainless Steel

*By* MR. C. GARNER
International Silver Co.

Read at New Haven Branch Meeting
January 4, 1938

THE words "Polishing and Buffing" are often confused in their real meaning. Both operations in general can be described as that operation in which a revolving wheel is brought in contact with a piece of work so as to produce a smooth, uniform surface.

Polishing is that operation in which the various types of wheels such as felt, walrus hide, leather, wood wheels covered with leather facings, and sewed cotton buffs are coated on their outside surfaces or facings with glue mixed with abrasives of various types and grits, depending on the type of work to be accomplished. These abrasives may consist of emery, alundium, corundum aluminium oxide, or any of the natural or artificial abrasives that are now on the market for such use. These wheels may be used either with or without a lubricant or grease, according to their several purposes.

Buffing is that operation in which the abrasive or polishing agent is not a part of the wheel itself but is applied to the wheel intermittently from a bar, cake, or tube composed of an abrasive and a binder for holding the abrasive to the wheel.

Buffing operations are further divided into two classes, namely, cutting and coloring. The cutting operation consists of removing all roughness, grain surface, scratches, and cuts, orange peel, drawing and stamping marks and any other defects caused either in manufacturing or from the preliminary polishing operations. The coloring operation consists of removing all excess greases, slight abrasions, and finger and wheel marks caused in the cutting down operation, and also of producing a high luster finish with a suitable color.

The operations just described are not new to the metal finishing industry by any means, as they have been employed in the hand method for ages. It is the adapting of these methods to

semi and full automatic machines that is different and which has become a part of mass production in the machine age. The most important factor in this procedure is naturally reduced costs followed closely by the uniformity and quality in finish. The saving in cost naturally comes through the ability of the machine to produce more work per hour with less operators and a much superior finish, because the machine can maintain a more constant pressure for a given time over the hand method which is dependent upon the human element.

There are many types of semi and full automatic machines on the market today, which are constantly being added to and improved upon. We will not mention any of the particular makes at this time, but any of the many manufacturers of buffing machines will be only too glad if called upon to design new machines or furnish you with standard models that will meet your particular requirements.

The main difference between the semi and full automatics is that the semi automatics are machines consisting of single or double buffing heads in which the work has to be removed and new pieces added after each operation. The full automatics consist of a series of buffing heads, each performing a different operation, and which are fed from some common unloading and loading station. These machines are generally equipped with a series of work chuck heads or spindles, which travel either on a circular table or in a straight line in such a manner as to allow each chuck to pause at the different buffing heads for various time periods to allow the performance of individual operations. The work then arrives at the unloading station in a finished condition. There are other types of machines in which one of the several buffing heads is in contact with the same spindle around the entire circle of the table back to the unloading station. The work then has to be rechucked for further operations on another spindle in contact with another of the buffing heads. The advantage of this type machine is that no time is lost in indexing from head to head, and the disadvantage is that two separate operations such as polishing and buffing, or cutting and coloring, cannot be accomplished without being put through the machine again. Cutting and coloring, however, can be done on this type of machine provided a satisfactory cutting and coloring abrasive can be used for the one operation which will produce

a suitable finish. Some of the types of machines mentioned are equipped with devices for applying the different abrasives while on others it has to be applied by hand.

The choice of a machine for your particular product is primarily decided by the quantity of work that you have to produce. It would not be economical to set up a full automatic machine for an order of 50 pieces of work requiring but one operation, but this could be very economically performed on one of the smaller type semi automatics. The reason for this naturally is in the amount of time required to set up each machine. On the other hand, an order of 5,000 pieces with three operations, can be done on the full automatic machines for about 1/10th of the cost on the semi automatic machines.

Another big factor in the choice of a machine is the kind of material you are using and the condition of the surface you have to start with.

Let us suppose you are using copper, brass, or nickel silver. It is possible to produce a satisfactory surface on any of these metals by buffing operations only, using the different compounds or tripolis without any preliminary polishing operations provided that your work comes through the manufacturing departments without excessive drawing, stamping, or forming marks from poor tools or poor workmanship. Considerable expense can be saved in both polishing and buffing operations by watching these points in manufacturing. If these defects occur, you will be forced to go through extra preliminary polishing and buffing operations in order to get the surface of your work in a proper finish.

If you have to resort to polishing, you must make up your set-up wheels with any of the materials before mentioned. A series of sections of sewed wheels made up to the required width and properly shaped to the contour of your article will work very well in many cases. Having selected the proper size grit for your abrasive, mix thoroughly with a good grade of glue and apply to the wheel surface or coat the wheel surface with glue and roll in a trough filled with clean abrasive. Make sure your wheels are clean and free from grease and dirt so that you can get a very good bond with the glue and abrasive. Wheels should be dried slowly and thoroughly and the surface broken up by hammering with a round rod or pipe. Do not use a sharp

instrument, as it will tend to chip off some of the abrasive and glue from the wheel surface. Your wheel is now ready for use and can be used either dry or lubricated with tallow or parafine, according to the several operations.

Care should be taken to select the proper size grit in your set-up wheels. Use as fine a grit as possible that will remove all of your metal imperfections because in using coarser grits than necessary, you will have to add more operations with finer grits in order to remove the deep scratches caused by the preliminary coarse grit operations.

In the buffing operations, select the type of wheel best fitted for your work. A sewed buff will produce a heavy fast cut, but if not carefully watched it is liable to groove or gouge your work. Some buffs are sewed spirally, some concentric with the center, some in ripple effects, and others in the form of arcs. There are also single disc buffs, packed buffs, and the so-called pocketed buffs. This latter type buff is very efficient for several reasons. First, for its cutting efficiency, second, for its ability to hold the buffing compounds, third, because the folds or pockets generate more air at the cutting surface thereby running cooler, and fourth, because the extra folds wear much longer. Due to these reasons, this type of wheel can also be run at higher cutting speeds without burning than some of the conventional type buffs.

There are many compounds or tripolis on the market each having its own particular work to do, and any of the makers will select the proper grade for your requirements. In the case of tripolis, care should be taken to get the material of the proper melting point, as a great amount of material can be lost down the exhaust pipes from either too low or too high a melting point. Proper combinations can be made up for your particular speeds and the materials you are using. In some cases, one material will produce a very good cut but no color and vice versa, but materials are available which will give you a very good cut and color suitable to produce a satisfactory finish in one operation. In testing tripolis, or compounds, do not hand a bar or two to one of your operators and ask him to try it out and see how it works. The proper method is to start off with new wheels, weighing the same before putting on the machine, also weigh out a sufficient amount of compounds or tripoli for the amount of work you are going to run on the test. After completing

your test, count the number of pieces buffed, weigh up the amount of buffing material left over, including the stub ends, and weigh your wheels again for wheel wear. Compare these results as to wheel wear, material consumed, and number of pieces buffed, and also the surface finish, and the results will show whether the new material being tested out is comparable with the buffing material you are now using.

There are several points in the finishing of stainless steel that demand attention. The careful watching of manufacturing operations, as stated before, and the consequent selection of proper grits are important. The finish of the sheet steel which you use on your article should be selected with the thought of how much abuse this material should stand in your manufacturing departments. If your article has very few operations and can be put through with few die marks or scratches, use a steel with a good finished surface and you will save the cost of this extra finished metal in your buffing operations, but if on the other hand your article is badly marked and scratched and requires annealings and picklings, use one of the coarser surface finishes.

In selecting an abrasive, be sure that it contains no iron or excess sulphur so that the surface can be impregnated with these materials which are liable to destroy the stainless properties at a later time. Artificial abrasives are the best, preferably those of the aluminium oxide class with the fused type slightly better than the unfused.

Your first or second stage of polishing should be made with dry set-up wheel while further stages should be made using some grease such as tallow or parafine. Cuts should be made at right angles to the previous cut, if possible, in order to eliminate deep scratches or work should be oscillated for the same reason. Avoid too much pressure on the buffing wheel as this type of material eats very readily and will discolor.

In buffing, use only clean buff wheels and never use those that have been used previously for brass, copper, or regular steel, as they are liable to contaminate the surface and cause stains at some later date. Pocketed buffs stand up very well on stainless steel. There are many stainless steel compounds on the market, each having its own particular points in both cutting and color-

ing. Green chrome oxide is being used very extensively with good results.

Brush finishes are very popular on certain articles and are very easily obtained. This finish is generally made after one or two preliminary polishing operations by brushing with pumice or other compounds. Care should be used that only brushes having stainless steel bristles or some non-metallic material as contamination can also be made with wheels having bristles of other materials.

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# History *of* Plating *in the* Motor Car Industry

*By JAMES W. HIGGINS*
Chemist, Packard Motor Car Co.
Detroit, Mich.
**Read at Baltimore-Washington Meeting January 29, 1938.**

I VERY much appreciate the honor of talking to you this afternoon and thought it might be somewhat interesting to cover the history of plating in the Motor Car Industry as well as present day procedures.

During the early era of motor cars, or about 1903, radiators, headlamps and other exterior parts were made of brass. However some of the smaller parts were made of steel and these steel parts were brass plated to match other fittings on the car. There was some demand for black nickel during this time and most companies had a small installation for this type of plate.

Brass continued in vogue until about 1915 although the demand for nickel plated small parts was increasing to such an extent that small installations were made in most plants. From 1915 until about 1922 most exterior parts on automobiles were either painted or black enamelled, but during 1922 nickel plating radiator shells was made standard on a number of cars, and several semi-automatic machines were installed in various plants.

Increased production of motor cars demanded something more productive than semi-automatics and, therefore, full

automatic machines were being installed quite rapidly in the Detroit area.

Chromium plating was, of course, the next advance in plating and came into view during 1927 and 1928. The Packard Company adopted chromium as standard early in 1928. Chromium plating was incidentally a life saver for the automotive plater because car owners were quite discouraged with the dull appearance of nickeled parts after a few months on the road and I am convinced that if chromium had not appeared on the horizon, that there would be very little plating on the present day motor car. As it is today, plating is one of the most important functions at our plant and there are 300 men engaged in polishing and plating at Packard.

I thought this little history might interest you, because as plating increased, so did criticism of plated parts increase. The great "bogey man" of plating, namely, rust and corrosion, appeared on the scene and it became apparent something had to be done about it and something was done. We at Packard began by getting every rusted part we could find on any of our cars and compared the amount of plate with other parts, that had not rusted, under the same exposure. I remember specifically examining a two-bar bumper on which the top bar had rusted and the bottom bar, which was next to the road, still looked perfect. An examination showed that the bottom bar had approximately five times as much plate as the top. We collected a great amount of practical data doing this work and in March 1930, a specification was released calling for 7 gms of copper per sq. ft. and 7 gms of nickel per sq. ft. and insisted on the specification being met. These specifications were taken very graciously by the plating trade in general and plated parts, on the whole, showed a great improvement.

I would like at this time to touch on the general plating procedures used in the automotive industry. These, of course, are divided into surfacing the base metals and electro-plating the part.

## POLISHING AND SURFACING METAL

I am frankly not an authority on polishing, but I would like to cover a few features which I believe are important.

I think that the polishing department is rather neglected these

days, every one seems to be enthused with brite zinc, brite copper or brite something or another, when, as a matter of fact, more money can be saved in the polishing department than any place along the plating line. It certainly takes longer to polish a part than it does to buff and, therefore, if by studying the job from every angle, it is possible to cut out a wheel, the saving is sometimes astounding.

Most of the polishing departments in our industry are well lighted which is most important. Ventilation is another important factor in the modern polishing department. Our maintenance division informed me that each wheel in our department uses 800 cu. ft. of air per minute and every effort has been exerted to make working conditions within the department as pleasant as possible.

I believe the general trend in the automotive industry is to eliminate as much polishing as is possible without sacrificing quality. The reason for this is obvious — "economy" — and this can only be accomplished by giving the part in question a thorough study as to design and other engineering features which may add to polishing costs. Another feature, which is extremely important, is the condition of the base metal as it is received in the polishing department. I think most of us have seen work, whether it was sheet steel, die castings or something else, in such condition that the polishing foreman hated to look at it.

The motor car people are insisting that sheet steel, die castings, etc., have the best finish, as to smoothness and porosity, as possible on the rough piece as it is received by the polishing department.

The motor companies on the whole are no longer using special polishing wheels made of felt, leather, sheepskin, etc., to obtain the desired finish on metals before plating. Entire production programs are accomplished with the common so-called rag wheel. These wheels are made in the various plants, and for rough polishing are made from cotton sheeting sewed up into 30 ply sections which are glued and pressed together to the finish width desired — 8 inches for a hard wheel; 3 inches for a soft wheel. Wheels used on finishing operations are made from sections consisting of canton flannel. The type wheel made, whether it is

soft, medium or hard, is controlled by using variable pressures when the wheel is made.

After wheels are thoroughly dried for 36 hours at 150° F. they are dressed or smoothed down, and balanced, and are ready for the first coat of glue. The glue temperatures are controlled at 125-140° F. The first coat is the sizing coat and after the glue is applied it is dried for 2 hours (room temp.) The wheel is again glued and the desired abrasive applied and well pounded to the wheel. The wheel after drying 8 hours is ready for the final coat of abrasive and this coat is dried for 24 hours.

The wheel room should be well ventilated and the temperature maintained at 75-80° with a relative humidity of 50%.

Control of glue is very important and most companies specify a No. 1 glue with a jelly strength of 290 grams and a viscosity of 95 millipoise.

## PLATING

I think most motor companies have two distinct types of plating to do, that is, on steel and zinc base die castings.

I believe every one here is probably familiar with the progress made on zinc die cast plating. At one time you know it was considered good plating practice to lash in brass and then nickel plate for about 10 minutes. *The automotive industry changed this.* I do not say this in a flattering way, on the other hand, it is in a critical way. *It had to be changed* and there was then considerable floundering and research done to establish a satisfactory plate. You will probably recall that it was thought advisable to eliminate the brass or copper strike and call for 6 gms of nickel per square foot. This amount of plate did not stop corrosion on outdoor parts and the amount of nickel was further increased. We increased it to 10 gms of nickel per sq. ft. and in a short time were into the cracking, which is common to heavy nickel, plated directly on the die casting. After running outdoor exposure tests on parts plated with varying amounts of copper and nickel, it was decided to call for .0003″ copper and .0005″ nickel and this ended plating complaints on die castings.

In the process of copper plating die castings most motor car

manufacturers are using a bath composed of approximately

| | |
|---|---|
| Copper (metal) | 2 oz. per gallon |
| Sodium Cyanide (Free) | 0.50-0.75 oz. per gallon |
| Rochelle Salts | 6-8 oz. per gallon |
| pH | 11.5-12.0 |
| Temperature | 140-160 |
| C. D. (oppox) | 15 amps. per s. ft. |
| Time | 20 to 30 minutes |

The cleaning of die castings in most cases is done with a degreaser and the parts are usually given a slight electric clean before plating.

After copper plating, the die castings are as a rule rinsed and then dipped in dilute sulphuric acid before nickel plating. The nickel baths are all of the bright variety, and the work after plating usually requires a light wipe to make it suitable for chromium plate.

### NICKEL PLATING STEEL

Most of the motor car people are plating steel on full automatic machines for both copper and nickel. At our plant we have a 5,000 gallon full automatic copper and a 20,000 gallon nickel tank. These two tanks are confined to the plating of steel parts only.

Most of the copper baths, I believe, are of the rochelle salt variety, although the metal and free cyanide are carried a little higher than in the die cast copper. A typical bath is:

| | |
|---|---|
| Copper (Metal) | 4 ounces per gallon |
| Sodium Cyanide (Free) | 1-2 ounces per gallon |
| Sodium Carbonate | 2-4 ounces per gallon |
| Rochelle Salts | 6-8 ounces per gallon |
| pH | 11.5-12.0 |
| Temperature | 140°-160° F. |
| Time | 10-20 minutes |
| C. D. | 30-50 Amps. per sq. ft. |

I believe all of the automobile companies that are nickel plating are using bright nickel baths of one type or another. These baths are of the high metal variety and a typical analysis would show:

| | |
|---|---|
| Nickel (Metal) | 10-11 ounces per gallon |
| Nickel Chloride | 5-6 ounces per gallon |
| Boric Acid | 5-6 ounces per gallon |
| Temperature | 125°-160° F. |
| pH | 2-5 |
| C. D. | 25-50 Amp. per square foot. |

The pH and temperature of the bright nickel baths, of course, depend on the type bath being used, varying between 2 and 5.

# Dr. Springer Approves of Mr. Hogaboom's Paper on the pH of Alkaline Plating Solutions

Dr. Richard Springer
i.H. Langbein-Pfanhauser-Werke
A.-G., Leipzig - O 5

Leipzig, den 15.December 1937

Dear Mr. Hogaboom,

I thank you very much for your kind letter and your very interesting paper entitled "The pH of alkaline plating solutions". Spending 60 days in travelling during the last 3 months I was not able earlier to thank you for your courtesy in sending me a copy of your report. I beg to be excused as to this delay.

I was extremely glad to see from your paper, that many new and interesting facts were discovered in U. S. A. on that field which I treated in my papers of last year.

I ended my report in the Zeitschrift für Elektrochemie as follows: "This investigation was suggested by questions of electroplating practice and in consequence thereof there was no intention and possibility to treat the matter exhaustively in all directions. It is very probable that investigations on a systematic and elaborate line will find out surprising developments. If this report succeeded to induce new ideas (besides exchange of practical experience) the chief purpose of this paper will be attained".

I am very glad to see that my prediction as to further surprising developments was realized by your investigation so speedily. The mutual treatment of this small but interesting field of electroplating means is indeed very gratifying to me.

As to the results of your report I would give the following comments:

1.) *The p H measurement with p H paper and with the regular block comparator*: It is true that the rapid color-fading of the pH paper makes it difficult for untrained people to check results; but after some training it is easy to get accurate results. According to your statement the pH values obtained with pH paper are comparable to those obtained with the comparator.

2.) *Cyanide copper solution.*

The K C N values in my report are understood as *free K C N.* I transferred your formula into contents of copper and potassium cyanide per litre to get comparative figures:

| *Hogaboom* | *Springer* |
|---|---|
| 16,2 g Cu } per litre<br>11,8 g KCN } | 20 g Cu } per litre<br>20 g KCN } |
| | Beside of this I examined also solutions with 5, 10 and 15 g KCN per litre. |
| *You stated*: | *My comments*: |
| a) At 13,0 pH the anode efficiency started to drop and at 13,4 pH the anodes coated over with a green film | It seems that this phenomenon does not appear at higher contents of potassium cyanide (i.e. 20 g/l) I observed at c.d. of 1-1, 5 amp/dm² and 13,5 pH a very good solubility of the anodes. |
| b) You did not observe any formation of blisters between 9, 7-10, 4 pH | I observed blisters only in the solution with 20 g Cu and 20 g free KCN per litre. In this solution with 20 g Cu and 15 g KCN per litre there did not occur any blistering (See page 735 No. 1) |
| c) The best pH range is between 11, 0-12, 2 | This statement is in accordance with my suggestion: the pH must not be below 10,7 (See page 735 No. 2) |
| d) Table I shows that the cathode current efficiency gets the highest values between 11,4-12,2 pH (the last but one value 89,3 seems to be an experimental error) | Page 736 (No. 3): the current efficiency seems to be higher between 11,5-12,5 pH; essential differences of the current densities at different pH values were not observed (Perhaps you have also found the difficulty of getting good reproducible values). |

3.) *Cyanide zinc solution.*

You stated that the anode efficiency falls to 42,5% at 13,0 pH. This observation corresponds with the suggestion in the instruction for pH paper VII that the pH of cyanide zinc solution must not be below 13,5.

4.) *Silver solutions.*

Your statement that the permissible pH range of cyanide silver solutions is very wide corresponds with our observations (See page 736 No. 4)

5.) *Cadmium solutions.*

The difference of the results is caused by the different compositions of our solutions. You had a solution with 19,7 g Cd and 168 g total NaCN per litre; our solution contained 15 g Cd and 75 g total NaCN per litre and an organie brightener. Our statement that the adherence is optimal between 12,0-13,0 pH applies only to LPW cadmium solution and special brightener.

6.) *Brass solutions.*

As you stated very truly the experimental results depend in a large scale on the composition of the solution. Your supposition that the formation of spotty and nonuniform deposits in our solution between 10,4-12,5 pH depends on the $ZnCl_2$ content is true; it seems however that not the Cl content of $ZnCl_2$ plays the detrimental role but minimal impurities of the commercial salt (See page 733 No. 5)

The results of our mutual investigations may perhaps be summarized as follows:

1.) The pH of alkaline plating solutions influences remarkably:
   a) the anode and cathode current efficiency
   b) the appearance and mechanical properties of deposits
   c) the composition of electrodeposited alloys.

2.) The optimal pH interval depends largely on the composition of the solution.

3.) In any case it will be necessary in future to give for every alkaline plating solution not only the formula, the current density and the best temperature but also the pH interval.

In conclusion I thank you once more for your kindness in sending me a copy of your report. I would be very glad to occasionally come across with a new paper of your dealing with this very interesting matter.

Very truly yours,

DR. R. SPRINGER.

# Reactions *in* Deposition *of* Metals

Mr. Wm. Phillips was the speaker at Detroit Branch meeting on January 7. His subject was "Reactions in Deposition of Metals." The apparatus used was novel and will be used by Mr. Phillips in his talks at other Branch meetings.

The apparatus used in place of the familiar projectoscope is known as a Schleren. It is a piece of optical apparatus which accentuates the difference in density in different parts of a solution, or other transparent substance. The light source is a strip filament bulb, the light beam from which is partially cut off by a razor blade. The remaining portion of this beam passes through our electrolyte, then is cut by another razor blade and from there it goes to the screen, which is on the wall in front of you. Changes in density of the solution have the effect of decreasing or increasing the intensity of the light, just as though the razor blades were being pushed closer together or further apart. The cells, or miniature plating tanks in which we actually carry on the electrolytic operations, are made with Bakelite frames and glass sides. The glass is held to the Bakelite by means of a substance known as "Picene". The cells are 1 1/8" high x 1" wide x 3/8" thick. All of these dimensions are inside dimensions. The electrodes, which we use, are of various materials in wire form, which is .020" thick. There is about 3/4" suspended in the solution, so that our measurements have to be made in milliamperes.

These tanks are so small that we have to use a solution consisting of about 5 cubic centimeters. This, you will observe, is too small to plate a radiator grille. The solutions used were:

(1) A cleaner in which were suspended two pieces of platinum wire, one acting as an anode and the other as a cathode. The cathode had an oily film on it and was allowed to run about two minutes. The current was then reversed and the action of the gas bubbles showed that reversing the current thoroughly removed the oil.

(2) The second display was a sodium sulphate solution, about 200 grams per liter, containing two indicators, one methyl-

red and the other one thymolpthalein. Platinum electrodes were used, and at one electrode the solution turned a deep purple and at the other a bright red. By reversing the polarity the colors in the solution reversed positions.

(3) This was a copper cyanide solution, using copper electrodes. This showed an extreme movement of solution, the heavy solution forming at the anode and light solution at the cathode. The copper, before being converted to double cyanide, showed a distinct blue color.

(4) This was an acid copper solution, using copper electrodes, in which the movements of the electrolyte showed very clearly, indeed, due to the dark color of the solution.

(5) This was a high pH nickel bath, run with nickel electrodes until pit-forming bubbles formed on the cathode. The cathode was then removed and wiped and a small amount of Gardinol added. The pit-forming bubbles ceased and the plating proceeded in a normal way when the right amount of Gardinol was added.

(6) This was a low pH nickel bath which was used merely to show the interesting flow of solution from the anode and the smaller amount of turbidity in the cathode area.

(7) This was an acid tin bath, in which platinum electrodes were used, first to show the effect of insoluble anodes. The flow which was apparent in the other solution was absent in this demonstration until the anode and cathode were reversed, in which case the tin deposited on the platinum wire acted as a soluble anode until it was completely removed.

(8) The eighth display was a chromium solution containing sulphuric acid only. This demonstrated clearly that the chromium sulphate had to be formed before plating would take place. The formation of this material was apparent on the cathode side, due to its dark color.

(9) This was a lead fluoborate solution which unfortunately had to be omitted from this talk. This demonstration shows the heavy formation of trees which extend one-quarter of the way across the tank, and then by reversing the current some very interesting flow reactions take place with the dissolving of the trees and their reformation on the other side of the cell.

# *Platers!*

# *Stop - Look - Listen*

## A. E. S.

# CONVENTION

MILWAUKEE - WISCONSIN

## *June 13 to 17, 1938*

We present a partial list of speakers and papers that will be one of the many interesting features on the program of the 1938 Convention that will be held at the Hotel Schroeder, Milwaukee, Wis.

Walter Meyer, General Electric Co., Bridgeport, Conn.
*Subject:* The effect of Metallic Impurities on the Structure of Cyanide Copper Deposits.

George Hogaboom, Hanson-Van Winkle-Munning Co., Matawan, N. J.
*Subject:* History of Metal Coloring.

Floyd Oplinger, R. & H. Chemicals Div., of Du Pont Co., Niagara, Falls, N. Y.
*Subject:* To be announced.

Anderson Branch—Rochelle Salts Copper Baths.
Springfield Branch—Answers to 101 Questions on Copper Plating.
Detroit Branch—Electroplating Solves Many Manufacturing Problems.
Newark Branch—Wetting Agents in Plating Solutions.
Hartford Branch—Dips and Uses in Cleaning Cycle.
Boston Branch—Philadelphia Branch—Dayton Branch
Waterbury Branch.

STOP to think what you will miss if you fail to attend.
LOOK for further information about the Educational Program.
LISTEN to authorities who are in the "know".

DECIDE NOW!

Robert B. Goodsell,
Publicity Chairman.

# *Ventilation of* Acid Dipping *and* Electroplating Rooms

*By* EDWARD C. DE LORME

**Read at New York Convention, 1937**

THE proper method of ventilation of process rooms where various irritating fumes are given off by electroplating processes or preliminary cleaning processes before hot coating or electrocoating, resolves itself into quite fundamental and well understood information, but the practical application of equipment to accomplish proper ventilation is not always as simple as it might be because there are practical problems introduced involving the selection of a proper material to resist corrosive action of the fumes, as well as the design of suitable hoods or air suction nozzles which must be effective and at the same time not interfere with the dipping process itself.

It is generally accepted that approximately 20 cu. ft. of fresh air per minute per person will produce acceptable ventilation in crowded theatres and office buildings, but an attempt to apply this law to dipping rooms would not result in the best condition because of the number of individuals in the room compared to the size of the room and the tanks contained within. It is, therefore, necessary to decide upon a quantity of air which will be sufficient to carry away the fumes which rise naturally from each tank, and remove these fumes within a few inches of the surface of the fluid within the tank so that the fumes will not diffuse throughout the room where operators are at work.

Carefully designed suction hoods along the front and back of each tank will accomplish this purpose if the hoods are connected to an exhaust fan of large enough capacity to produce a definite draft of air across the entire surface of the dipping tank into the suction hood or hoods.

At times when materials are being lifted from the tanks, fumes may escape these hoods, however, and still diffuse throughout the air of the room. Consequently, a larger hood over the entire dipping tank and connected to the same or another fan system should be included to completely remove fumes from products as they are lifted from the tanks.

The specific designs of these hoods depend upon each individual process and problem in hand but the fundamentals are essentially as described above. The determination of the quantity of air, therefore, resolves itself largely into a matter of determining the maximum velocity at the suction hoods to keep the fumes confined to the hoods. Having determined this velocity and carefully designing the hoods to the minimum size, the volume of air within becomes a direct function of the area of the hood.

A more serious practical problem, however, may be found in the selection of suitable materials of which to build the collecting hoods and fan equipment itself. Some of the vapors given off by various processes include nitric acid, hydrochloric acid, sulphuric acid, fumes of potassium and sodium cyanide, cleaning fluids and caustic soda, most of them materials intended for the purpose of attacking metals and oils or greases and, therefore, definitely capable of attacking the material of the exhaust hoods and fan equipment. These fumes, when mixed with air, are accompanied with plenty of oxygen and water vapor to carry out complete corrosion and often special metals which are suitable for continuous piping of fluid acids will break down completely when exposed to the fumes of the same acids mixed with water vapor and oxygen as found in air.

It is interesting to note that, in general, dipping tanks are constructed of ceramic materials or wood and that the thickness of the walls of these containers is of the order of magnitude of 2″ to 4″ so that normal corrosion, even of these materials, will not require replacement except occasionally. This suggests that the base material for constructing exhaust hoods or fans would be material of a ceramic nature or of wood but unfortunately these materials are not suitable for such work.

As a second approach to the problem, therefore, a careful selection of materials suitable for construction but coated with acid-resisting protective coatings must be used. This at once suggests the usual asphaltum base paint materials which have been used well developed for resistance against corrosion and also the use of special alloys of nonferrous and ferrous metals which have been proven metallurgically to be resistant against certain acids. Rubber coatings and even coatings of glass or lead have some application but are usually more difficult and

expensive to apply. It, therefore, appears as if the suitable ventilation of acid-dipping rooms and electroplating rooms should first require the localization of the dipping tanks into separate corners or sides of the room with a special material and a different material selected for the construction of exhaust duct work in fan units for each particular acid fume given off by each particular tank. Dipping tanks give off nitric oxide and chlorine fumes. For example, tanks giving off hydrochloric acid fumes might be hooded with a material known to be resistant against hydrochloric acid but one which would not stand up against sulphuric acid fumes. Again, in another corner of the room, a tank giving off sulphuric acid fumes might be hooded by a system involving a special metal that would not be corroded by sulphuric acid fumes but which might be vigorously attacked by fumes of hydrochloric acid. If both hoods were completely and carefully designed so that no cross current of fumes from one tank to another could occur, the life of the exhaust system should be indefinite.

The removal of large quantities of air for purposes of ventilation now introduces a serious heating problem in winter time. Natural air exhausted must be replaced by fresh air coming from outdoors and fresh air must be heated to a temperature comfortable to the workmen. Most of our heating systems of today are based upon the recirculation of 75% or more of the air in an enclosure so that the desirability of recirculated air is at once obvious. This suggests, therefore, the possibility of an air washer through which air from the hoods over the dipping tanks could be passed, the water sprays removing the fumes, purifying the air for recirculation into the room. Fortunately, most of the acid fumes are very soluble in water and if the design of the system can be arranged to make use of water passed through the spray washer only, a few times before being discharged to the sewer, this water will absorb the fumes and carry them away to the sewer as waste water.

Again, the problem of corrosion must be carefully considered, because the washer itself must be made of materials which might be subject to corrosive action of acid fumes and, while these fumes will be diluted in the water spray, there are certain portions of the washer which will be exposed to the fumes before they reach the sprays themselves. Often the continued use of

water in a dipping room does not present a serious expense and, where such is the case, a properly designed air washing unit might well pay for itself by savings in the coal bill because of the possibility of the use of recirculated air.

The general conclusions which may be drawn, therefore, from this discussion point definitely to the fact that each specific problem has its own solution and that a properly engineered design may produce very satisfactory results but that, unless a careful analysis is made, involving all factors, a system may result which will be either inadequate or will disintegrate by the attack of acid fumes within a very short time. The complete analysis, there, requires the experience of a fan engineer, a metallurgist, an electrolytic or dipping tank expert, and a chemist. Unless all four experts are consulted, a system may be installed which will not be entirely satisfactory.

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## C. Edward L'Hommedieu

C. Edward L'Hommedieu, vice president of the L'Hommedieu Plate Machinery and Supply Company, 4521 Ogden Avenue, died recently in his home at 450 Iowa Street, Oak Park, after a brief illness. He is survived by the widow, Grace, and a daughter and two brothers. Funeral services were held from the chapel at 203 South Marion Street, Oak Park.

## Thomas W. Haddow

**Assistant to the Sales Manager, Maas & Waldstein Company**

Thomas W. Haddow, 34, of Pompton Plains, New Jersey, assistant to the sales manager of Maas & Waldstein Company, Industrial Finish Manufacturers, Newark, New Jersey, was killed in his own home on January 19th, by the accidental discharge of a rifle he was cleaning.

Mr. Haddow had a wide circle of friends in the electro-plating and metal finishing industries. He began his life work in the electroplating field, and joined the Maas & Waldstein organization in 1925. He is survived by his wife and an infant daughter. His father, Thomas B. Haddow, is one of the founders of the American Electroplating Society.

Business and Social News

# BRANCH NEWS

Educational Activities



## TOLEDO BRANCH

A meeting of the Toledo Branch A.E.S. was held Thursday January 6th, at the country home of Mr. Spanolis. There were 19 members and one visitor present.

The meeting was called to order by President Moore. The minutes of the last meeting were read and approved, and all bills ordered paid.

The question of preparing a paper "branch" for the Milwaukee Convention was discussed, and President Moore appointed Mr. Lester Cope to head a committee of his own selection, to select a probable subject, and to report the results at the February meeting.

The members voted to grant Newark Branch permission to have an exhibit at the 1939 Convention, with the proviso that the Supreme Society receive 50% of the proceeds.

There being no further business, the meeting was turned over to our Librarian Mr. Bergeman, who found the following queries in the question box:

*Q.—What is a good treatment for blooming rubber?*

Ans.—Tumble the parts in glycerine.

*Q.—What is the best way to eliminate blisters on unbuffed surfaces of die castings?*

Ans.—Proper cleaning, 5 to 10% Hydrofluoric acid dip for about 30 seconds. Do not over-clean in alkaline cleaner, suggest about 30 seconds. 5% H.C.L. may be used instead of Hydrofluoric acid.

*Q.—What kind of pickle do you use for stainless steel?*

Ans.—Pickle for a half hour in a hot solution (100° F.) of 20% Hydrochloric acid. (H.C.L.)

The meeting was then adjourned and the balance of the evening spent playing cards and disposing of an excellent "Dutch Lunch."

W. WEIKER, *Sec.*

## BRIDGEPORT BRANCH

The regular monthly meeting of the Bridgeport Branch was held on Friday evening, January 7, in the Chamber of Commerce Rooms at the Stratfield Hotel. There were 35 members present.

The roll call of officers was read and all were present. The minutes of the last meeting were read and accepted.

The communications were read and ordered put on file.

There were no applications nor balloting for membership. Unfinished business, none.

All bills against the Branch were ordered paid.

Good of Order: Walter Meyer, Chairman of the Educational Committee, who so successfully obtains good interesting speakers for our meetings, presented Mr. Al Schneider of the General Electric Co. and one of our local members, to be the speaker of the evening. Mr. Schneider gave a most interesting outline of his five years experience on Chromium Plating, as well as helpful facts concerning Nickel Plating and Pickling. Samples of work done by Mr. Schnieder were passed around among the members that they might view his results and ask questions pertaining to the work and the talk.

Mr. Schneider was tendered a rising vote of thanks by all present.

The Program Committee has outlined other fine speakers and interesting meetings for February and the remainder of the years and would appreciate the interest of members by their attendance at these meetings. Preceding the February meeting a supper will be held and two well known speakers will be presented.

The membership committee, Chairman Ray O'Connor, Gene Phillips, and Joe Sterling and Geo. Wagstaff held a short meeting after the regular meeting to make plans for a drive for new members.

WILLIAM FLAHERTY, *Sec.*

## *WATERBURY BRANCH*

The regular monthly meeting of the Waterbury Branch was held at the Hotel Elton, Friday, January 14th.

Sixty-one members were present to hear a talk given by Dr. Weisberg of Weisberg, Inc., on Cobalt Nickel, Bright Nickel Solutions.

Dr. Weisberg gave a very excellent talk on the bath and its advantages and its troubles. He also gave complete instructions for operating the bath so that it would be possible to take his formula and start operation in any Plating Room. After Dr. Weisberg's talk several questions were asked concerning the operation of the bath and some of the difficulties which might be encountered. All of the questions and answers brought out important points concerning the bath. Dr. Weisberg is to be congratulated on giving a talk which contained so much detailed information and the members of the Branch felt that his talk was an outstanding one.

One application for membership was received from Edward J. Nolde for active membership.

The meeting adjourned at 10:30 p.m.

At the February meeting to be held February 11th Mr. Vincent Davis will show his colored moving pictures on the outdoor exposure tests conducted by the Research Committee under the direction of Dr. Blum.

E. T. CANDEE, *Sec.*

## *CHICAGO BRANCH*

The 26th Annual Educational meeting and banquet of Chicago Branch was held Saturday, January 15, 1938, at the Palmer House in Chicago. The afternoon session was well attended, there being about 350 men in attendance. The program was very interesting and Mr. O. E. Servis, the chairman, kept things going from 2:00 p.m. until 5:45 p.m. to get through all the papers

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and discussion. He also introduced our National President and Executive Secretary, Mr. Wilson and Mr. Kennedy, who both gave a short resumé of the society doings.

There were in attendance members from Milwaukee, St. Louis, Detroit, Anderson, New York, Newark, and many non-member visitors from the nearby cities of Louisville, Ky., Rock Island, Rockford, Janesville, Wis., Elkhart, Goshen, and Indianapolis, Ind., St. Paul and Minneapolis, Minn.

The banquet in the evening was a gala event as 681 people sat down tc eat and the music and floor show started on the best ever of Chicago Branch Banquets, which usually are very interesting both to the members and visitors and the ladies all get a kick out of them. The people who usually spread out souvenirs were lacking this year, whether from bad business or the depression using up the surplus we don't know. Plenty of entertaining was had in rooms as well as at the tables and everyone seemed to be having a good time. We hope that our Annual Convention in Milwaukee in June 13 to 17 inclusive, will have as good or larger registration, those boys deserve the patronage, so until then "Auf Wiedersehen."

CHICAGO BRANCH COMMITTEE.

## *NEW HAVEN BRANCH*

The New Haven Branch of the A.E.S. held its monthly open educational session Tuesday evening, Jan. 4th, at the Sterling Chemistry Laboratory of Yale University. A large turnout of some 125 members and guests were present.

Through the efforts of Mr. Lee Sparks of the E. I. Dupont de Nemours Co., a very interesting vitaphone movie entitled "The Wonder World of Chemistry" was presented. This was indeed a very fine picture which showed the important part that the chemist and chemistry play in modern industry.

Following the movie Mr. H. Garner ("Doc") of the International Silver Co. gave a very interesting paper on "Cutting, Buffing, and Coloring Methods." Mr. Garner included in his paper the preparing and setting up of wheels, influences of different speeds, and grades of buffing wheels, methods of testing efficiency of buffing wheels and buffing compounds, etc.

Joseph Sullivan of the New Haven Clock Co. then gave a talk on the B. E. K. Gold Plating Process. This process differs from the ordinary type of gold plating in that three other metals are plated simultaneously with the gold. A subsequent heat treatment causes the plate to work into the base metal forming an alloy.

Interesting discussions folowed both talks.

We were glad to have Mr. Kennedy, Executive Secretary, with us. He gave us a few words on recent developments of the A. E. S.

The first meeting of the course in the Analyses of Plating solutions under the leadership of Tom Chamberlain of the educational committee and Dr. J. Vance of the Yale Department of Chemistry got underway Thursday, January 6th, at the Sterling Chemistry Laboratory. Fifty-three members have signed up for the course and were present. This course will be held weekly on Thursdays for sixteen weeks. It will include the complete analyses of all the common plating solutions.

The following men, all members of New Haven Branch, are acting as assistants in the laboratory under Tom Chamberlain and Dr. Vance: Hank

Kellner, Charlie Costello, Joe Downs, S. Carrano, B. Bridgett, and J. Sullivan.

J. SULLIVAN.

## *DETROIT BRANCH*

*What is the function of Rochelle Salt in the Rochelle-Copper cyanide plating solution, particularly its action chemically in the solution?*

A. The most important function is that of producing a polarization film at the anode which is more readily soluble in the presence of low free cyanide concentration, than the black oxide film which covers the anode when Rochelle salt is not present. The alkalinity and free cyanide concentration both have a great effect on anode performance, and a wider range of these variables is possible in the Rochelle bath.

*Q. What is the best means of obtaining a chocolate brown oxidized finish on copper?*

A. Barium sulphide is recommended. If the copper is an electrodeposit, no sulphur compounds such as "hypo" should be used in the plating bath, as these interfere with uniform action of the colored solution.

*Q. How do you plate bright chrome on brass?*

A. It is difficult to plate bright chrome on brass directly, particularly on irregular shapes. If an undercoat of nickel is not desired, it is best to use a chrome plating solution of relatively low concentration and high sulphate ratio.

*Q. Is roughness on the work in nickel plating ever caused by placing new anodes in the tank?*

A. In themselves, the new anodes are unlikely to cause roughness, but the agitation of the old anodes, when introducing new ones, would doubtless result in roughness on the work.

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*Q. How much "wetting agent" should be put in a nickel solution per gallon?*

A. A maximum of ¼ fluid ounce per gallon.

*Q. What effect on the corrosiveness of the nickel plating bath does the "wetting agent" have?*

A. None.

*Q. What is the best method to pickle cold rolled chrome nickel steel and at the same time leave the steel blue and in such a condition that it will polish or buff easily when fabricated?*

A. A good method is to use a bath of caustic soda and sodium citrate and pickle electrolytically, making the work alternately cathodic and anodic at intervals of a few seconds.

*Q. Is it necessary to have an acid dip between cyanide copper and low pH nickel (either dull or bright), or is a double rinse enough?*

A. If the time element is short, no acid dip is necessary.

*Q. What are the reactions on the surface of steel during bonderizing?*

A. The bonderizing bath is sufficiently acid to etch the steel, and the surface is converted to a phosphate compound of iron.

*Q. What was the outstanding de-*

*velopment of the Electroplating Industry in* 1937?

A. While this is a debatable question, the progress in bright nickel plating, at least in quantity, is probably the most notable accomplishment.

T. C. EICHSTAEDT, *Sec.-Treas.*

## *BINGHAMTON-ELMIRA BRANCH*

The regular meeting of Binghamton-Elmira Branch was held Monday, January 10, 1938, at the plant of the Oneida, Ltd., Sherrill, N. Y., at 2 p.m. at which time all members were taken on a tour of inspection through all the manufacturing departments. The tour lasted for three hours, and every detail in the manufacture of silverware was shown and explained. It was worth the effort of driving over icy roads to see the wonderful plant, and work being done, by three A.E.S. members, Mr. F. C. Mesle, Mr. A. E. Thurber, and Mr. MacDonald. To these three gentlemen Binghamton Branch expresses their thanks for the best meeting this year.

After the plant visit a regular meeting was held at 5 p.m. at the Sales Building at which time Mr. Kellner, Works Manager of Oneida, Ltd., welcomed us, Mr. W. J. R. Kennedy, Executive Secretary, then spoke on the aims of the A.E.S., and also the possibility of creating more interest in the A.E.S. around Syracuse. Possibly alternating meetings between Binghamton and Syracuse. Plans are being made to have a meeting in Syracuse during March or April.

Mr. A. E. Thurber, Technical Advisor of Oneida, Ltd., then presented a paper "Some Observations Made on Anode Corrosion with Special Reference to Silver." The paper was explained with picture samples and microphotos of the corroded anodes. It was very interesting and well presented by Mr. Thurber who had to answer many questions.

Dinner as prepared in Oneida was then served at 6:30, after which Mr. Dave Clarin of Oakite Products entertained with several tricks. Dave is becoming quite a magician.

Mr. Oliver J. Sizelove of Fred Gumm Chem. Co., then presented a paper on "Bright Nickel Solutions," which was followed by many questions.

We were also pleased to have with us Mr. Frank Kohlmeier, President of Rochester Branch and Mr. Gustaf Soderberg of the Udylite Co., Detroit.

AUSTIN FLETCHER, *Sec.*

## *GRAND RAPIDS BRANCH*

Grand Rapids Branch held an open meeting January 13, 1938, in the rooms of the Michigan Brewing Co., for members, wives and friends. About forty people were present including Mr. Willard of Detroit Branch.

The evening began with cards, each group playing their own favorite game which helped them in getting better acquainted. Next on the program was dancing with music furnished by Janet Bosworth's orchestra, and can those platers dance, the party was then in full swing. Mr. Smith, one of our members, furnished us with a song and dance number which was well received. At 10:30 the orchestra played the grand march which formed a line to the lunch table well stocked with good things to eat and drink.

Home, sweet home came all too soon for the merrymakers who expressed their appreciation for a good time.

CHARLES S. WHALLEY, *Sec*

## *BOSTON BRANCH*

Boston Branch met thursday the 20th at the Bradford Hotel, Boston, at 8:00 p.m. with President Mintie in the chair.

Minutes of the previous meeting were read and approved, communications and bills read, and bills ordered paid.

The members of the Branch will attend the meeting of Providence Branch, Friday January 21st, and hope to help that branch to get members.

The banquet committee made its report and it will be the biggest ever held. Tickets have been sent to all the members and we hope that you will all please return your cards as early as possible, so that we may be able to keep the hotel informed as to the number of plates. We ask everyone holding tickets to co-operate with the committee in this.

The librarian made a report on the coming Research Educational Session and Dinner to be held at the Bradford Hotel January 25th and all are welcome to attend.

Charles Hardy spoke on the chemistry class and has plans for the class again this year, so if the members want one, attend the next meeting.

Bert Sage, our librarian, then took over the chair and discussed the paper read at the last convention, "The Health Hazards of the Plating Room." There was plenty of discussion, and questions and answers lasting for a few hours.

The meeting adjourned at 10:00 p.m.

A. W. GARRETT, *Sec.*

## *DAYTON BRANCH*

The January meeting of the Dayton Branch was held at the Engineers Club on Friday, January 7th.

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It was definitely decided that the Branch would present a paper at the 1938 convention, the subject to be decided on at a later date.

Our librarian, Dr. Berner, announced Mr. Geo. Hogaboom as our speaker for February.

Departing from our usual custom of having an outside speaker on our program, we had several of our own members give short talks.

Mr. Beck from the Stolle Corporation, talked on "The Operation of a Job Shop." He explained many of the problems experienced by a job shop that are seldom seen in a large plant that is operated on a production basis.

The job shop operator is usually called in after a piece has been designed and finished up to the plating operation. Then he is expected to get a good plating job, regardless of the size and shape of the piece or the quality and kind of stock used in making it.

Mr. Beck gave several examples to show that at times this is practically impossible.

Mr. John Cool of the National Cash Register Company discussed "Hard Chromium Plating" and its many uses in building up dies and gauges, and told of the possible savings when it is

used to salvage tools and dies that have been undercut, due to an error in design or on the part of the workmen. Formerly such jobs were scrapped and are now salvaged practically one hundred percent.

Mr. Harry Misner of the Max Wocher Company gave a very interesting and entertaining description of the manufacture and finishing of surgical instruments.

Mr. Misner displayed a rare wit which, coupled with his explanation of some of the more unique apparatuses manufactured by his company, had the members and guests applauding for more.

To finish up our educational program, Mr. H. C. Luchauer gave a talk on "The pH Control of Alkaline Solutions."

Mr. Luchauer demonstrated several methods of taking Alkaline pH's and gave the proper operating range for several different baths.

At the close of these four short discussions these men were given a vote of thanks for their fine talks.

This being home talent night it had been arranged to make it a complete one and Mr. Conley introduced Mr. A. H. Sturm, an amateur magician, who gave a demonstration of manipulative magic not concerned with the plating room.

Mr. Sturm's best and most mystifying trick was the Hindu rope trick in which a straight rope is tied at the ends and then cut several times and finally found to be as good as new.

After Mr. Sturm had produced coins, red balls and cards from the walls, draperies, and thin air, until they were dazed, the audience was led into another room where Mr. Conley produced quantities of that liquid that put Milwaukee on the map by simply turning a handle.

This was accompanied by a buffet luncheon and a very good time was had by all.

This meeting adjourned at a very late hour until February 4th.

CORLISS W. POWELL, *Sec.*

## *LOS ANGELES BRANCH*

Minutes of the regular monthly meeting of the Los Angeles Branch of the American Electro-Platers' Society held January 12, 1938 at the Rosslyn Hotel. President John L. Merigold presided. Minutes and financial reports were read and accepted.

Mr. Maurer, Chemist of General Electric Co., Ontario, Calif., conducted the third of a series of lectures on modern methods of electro-plating. His topic being addition agents in the chrome bath. This information was decidedly instructive and caused considerable discussion which was also helpful. Mr. Maurer received enthusiastic applause at the close of the educational hour.

Members voted to have a follow-up letter mailed to the various manufacturers employing platers, encouraging them to subscribe to the support of the fine work that is being carried on by Mr. Phillips and his associates.

Meeting adjourned at 11:15 p.m.

RAYMOND SOLIVAN, *Sec.-Treas.*

## *MONTREAL BRANCH*

I thought that perhaps you would like to hear how the close of the year finds the Montreal Branch.

As regards membership I am sorry to say that there has been no increase of note. Mr. E. A. Mahan, 475 Strathroona Avenue, Montreal, has resigned. Mr. Romeo Chaulet, 6794 St. Denie Street, Montreal, who resigned some time ago asks to be reinstated. We are glad to have him with us again.

At our last meeting we had 100% attendance. The meeting was especially to discuss the arrangements that we had made with Mr. W. Phillips regarding having him come to Montreal to give his projectroscope talk on the working of plating solutions. As a result of this meeting we had 200 letters multigraphed and these I have sent out. Already I have received 49 applications for tickets and at this writing there have been only three mails here that could have brought replies. There is every indication that we will have a great success with the meeting. We also expect as a result of the meeting to put over such an advertisement for the society that the membership will take a jump during the next few months. Our finances are in good shape considering the smallness of our membership. I have had no reports of unemployment among our members though some have been on short time. Both the change in the day for the meeting and the change in the place seem to meet with the approval of the members. Everything points to a good year ahead.

JACK CRONIN, *Sec.*

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## *CLEVELAND BRANCH*

The regular monthly meeting of the Cleveland Branch of the A.E.S. was held Saturday, January 8, 1938, at Hotel Cleveland.

The meeting was called to order by Mr. Henry Weber at 8:30 due to the absence of our president, Mr. Scott, and vice president Mr. Matts.

The minutes were approved as read.

Mr. Barney Case applied for associate membership in the Cleveland Branch.

Mr. Horvath, Jr., was elected as an active member.

Motion made by Mr. Carlson and seconded by Mr. J. Hyduke for the members of the Cleveland Branch to exhibit at the Milwaukee Convention in June.

Motion made by Mr. Carlson to have Mr. Case write a paper to be read at the Convention.

Mr. Hogaboom is to give a talk on pH at the next meeting, February 5, 1938.

Electro Chemical Society and Master Platers Society invited to attend. This will be an open meeting.

Meeting adjourned at 10:30 p.m.

CHARLES F. OTT, *Sec.-Treas.*

## *NEWARK BRANCH*

The regular meeting of the Newark Branch A.E.S. was held on Friday evening, January 7, 1938. A communication was read from Mr. C. F. Ott of the Cleveland Branch referring to a new chromium anode and it was decided that the secretary answer same. A letter from Mr. T. C. Eichstaedt of the Detroit Branch was read and our members were very pleased with the enthusiasm and good wishes extended to Newark Branch.

An application for Morris Messing to Associate Membership was voted to take the regular course.

Mr. Wm. F. Newbery was elected to Associate Membership, Michael Salvagio, Meyer Roter, and Joseph Klein, Jr., were elected to Active Membership.

Mr. Horace Smith brought up the subject of a new meeting room for the society and recommended a room at the Hotel Douglas stating that he and the secretary had inspected some of the rooms at the Hotel and found them more suitable, from the standpoint of the Guest Speakers, both as to location and appearance. The question of parking convenience for cars was brought up and it was decided that it was just as easy to find parking space at the Hotel Douglas as it is at the Krueger Club.

The motion was made and carried that the society hold their meetings at the Hotel Douglas starting with the first meeting in February, all members to be notified by the secretary.

Mr. George Reuter stated that the chemistry class would continue to the end of March.

Mr. Reuter gave a very interesting talk on Nickel Plating steel articles that have been hardened and tempered. The articles are first pickeled in a 50% Hydrochloric solution. After pickeling, articles are washed in clear water and transferred to a tumbling barrel containing Alundum as an abrasive. Articles are tumbled for about five hours, after which they are transferred to a Hop which separates the abrasive from the articles. They are next transferred into a sawdust dryer and tumbled for seven minutes after which they are again separated by means of a Hop. The racking operation is next, which is followed by the cleaning and plating operation on an automatic conveyor, which includes a caustic cleaner and cold water rinse after plating. The plating operation is as follows: from cleaner to cold water rinse, to hydrochloric dip, to cold

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water rinse, to nickel solution, to cold water rinse, to caustic cleaner, to hot water rinse. The articles are then transferred to a sawdust tumbler for twenty minutes.

The formula for the nickel solution:

| | |
|---|---|
| Single nickel sulphate | 28 oz. |
| Nickel chloride | 7 oz. |
| Boric Acid | 5 oz. |
| Water | 1 gal. |
| pH | 5.8 |
| Temperature | 140° F. |

This talk was very enthusiastic and Mr. Reuter was bombarded with questions for another half hour.

Meeting adjourned at 11:00 p.m.

GEORGE WAGNER, *Sec.*

## *PHILADELPHIA BRANCH*

Philadelphia Branch meeting called to order by President Joe E. Underwood. Roll call of officers. All present but one.

Meeting turned over to Vice President F. Fulforth; after a brief introduction, Dr. Mantell gave a very interesting and timely talk. This talk is one that every branch should try to have; also heed. Every branch should try to have the manufacturer executive and foreman present, as Dr. C. L. Mantell does not mince words and speaks very plainly. This is a brief resumé of the discussion that took place after Dr. Mantell finished his talk. We should avoid being like the old time varnish maker, who let his profession slip away from him by his obstinate attitude of not letting any one become his assistant and kept his secrets to himself in his dark room. Then when the synthetic varnish came into being they reversed the old order and popularized same by informing every one, all there was to know about it even to the formulae; its preparation, its use and its quality in relation to resinous varnish. Now for the best interest of our profession it seems logical that we should be more agressive and let the buying public know more or should we say educate the buyer and consumer to the point that they would demand to have quality; both in decorative value and wearing and resistant values. We should awaken the various manufacturers that it is best to have a standard set for the proper thickness and keep to it.


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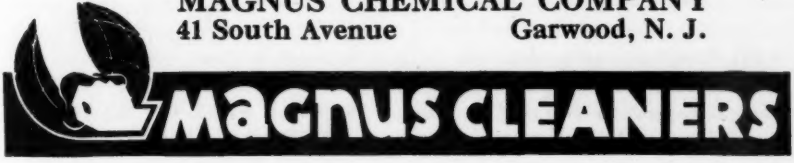

At the conclusion of his remarks, Dr. Mantell was given a rising vote of thanks.

Communication from President A. B. Wilson read; moved and seconded that the branch hold discussion ae next meeting and members to bt notified of same.

The Board of Managers approved the following applications:

Mr. W. A. Bantle, C. W. Smith, T. Wallace as Active Members, and G. F. Bieber, A. T. Harris, A. C. Pearson, F. L. Oldroyd as Associate Members.

Moved and seconded that same be elected members of Philadelphia Branch. Carried.

Communication from Supreme Vice President Franklin J. MacStoker read. Moved and seconded that same be received and placed on file. Carried.

Secretary informed Branch that Mr. P. Kurzeknabe passed away January 16, 1938; also had flowers sent for funeral. As a tribute to the memory of the deceased, the members arose and remained silent for a few moments.

Communication regarding the granting of permission to Newark Branch for exhibits at International Convention at Asbury Park, June 1939, read; moved and seconded that the branch instruct delegates to vote yes. Carried.

Report of Research Committee: A. Hirsch reported favorable on research meeting held at Temple College in December, 1937; also asked permission to have a follow-up letter sent to all contacted. Moved and seconded that Mr. Hirsch be given permission to prepare and send to all those he has on his list a follow-up letter and report to the Branch on same. Carried.

The several members who are to prepare papers to be read at the Branch for the Milwaukee Convention will have them for next meeting so that they can be selected.

Communication from Milwaukee Convention Committee read. It was moved and seconded that same be received and members kindly take note.

There being no further business, the meeting adjourned until February 18, 1938, at Harrison Lab., U.P., 34th and Spruce Streets, Philadelphia, Pa.

ROBERT E. JACKSON, JR., *Sec.*

## *HARTFORD BRANCH*

The Hartford Branch of the A.E.S. held its regular monthly meeting on Monday evening, January 17, 1938, at the State Trade School, 110 Washington St., Hartford, Conn.

The meeting was called to order at 8:15 p.m. with President Pietro in the chair. Minutes of the previous meeting read and accepted. All communications were read and placed on file. One bill for printing of letterheads and envelopes was voted paid, which amounted to ten dollars and twenty-five cents ($10.25).

One application from Mr. Howard B. Wilson, of the Plainville Electroplating Company, was received for associate membership, and voted to take the usual course.

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Wilfred S. McKeon, President.

The president was instructed to appoint a committee to decide as to the feasability of the Branch giving an Educational Session and Banquet this spring. The committee is to report at the next meeting.

The speaker of the evening was Mr. Herbert Noble, assistant metallurgist of the Pratt & Whitney Aircraft Corp., of East Hartford, who spoke on "Hydrogen Embrittlement in Connection with Cadmium Plating." His talk was very instructive as well as interesting. In conclusion he was given a rising vote of thanks.

The meeting was attended by forty-five members and visitors and was adjourned at 10:45 p.m.

VERNON E. GRANT, *Sec.*

## *ANDERSON BRANCH*

A business meeting of the Anderson Branch American Electro-Platers' Society was held Tuesday, January 18, at the Y. M. C. A., with President George W. Onksen presiding.

The roll call of officers was made with all present. Minutes of the previous meeting was read and approved.

Brothers Wagner, Minton, Castell, and Hauri were appointed by Chairman Guy M. Cole to serve on the Exhibit Committee to represent the local Branch at the National Convention at Milwaukee in June.

The Treasurer's report for the second quarter, 1937-38 was read and duly accepted by the Branch.

A report on the annual Educational Meeting of the Chicago Branch was given by R. M. Wagner.

Routine business being completed the meeting was adjourned at 9:00 p.m.

ROY B. PHILLIPS, *Sec.*

## *PROVIDENCE-ATTLEBORO BRANCH*

Providence-Attleboro Branch held its regular meeting at Narragansett Hotel, Friday, January 21, 1938.

Mr. Wm. J. R. Kennedy and Mr. Frank Clark, of Springfield, were present, as also were about 8 from Boston Branch, visiting us to inspire a little life so that we also may grow to 100, and they did their job well.

Mr. Chace opened the meeting with a brief talk, then called on the Secretary to say something, after which he asked Mr. Kennedy to act as Chairman.

Mr. Kennedy talked on the condition, past and prospective, of the Branch and Society, after which the meeting was open for discussion of how to build up the membership, Boston Branch taking a very active part.

Mr. John Garrick, Mr. E. C. Rinker, Mr. Wm. F. Cahill, and Mr. Joe Smith were appointed a committee to secure new members.

There were several new faces in the meeting, and we received four applications. There were 32 present.

We adjourned about 11 o'clock.

Mr. Oplinger of the R. & H. Chemical Co., will speak at the next meeting at Narragansett Hotel, February 21, on "Disposal of Waste Cyanide Solutions in Industry".

JOHN ANDREWS, *Sec.*

## *BRIDGEPORT BRANCH*

The February meeting of the Bridgeport Branch was held on Friday evening, February 4, at the Bridgeport Club. Joe Sterling, president, called the meeting to order at 7 p.m. There were forty members present.

The roll call of officers was read and all were present.

The minutes of the last meeting were read and accepted.

Reports of Special Committees: Sick Committee, none. Special Committee, the banquet committee and members voted that the local Branch would hold a banquet on April 30 if plans with a Hotel could be completed. The president appointed Ray O'Connor as chairman with the following committee to assist him in arranging the affair: Walter Meyer, Eugene Phillips, George Wagstaff, George Karl, and Joe Sterling. It is anticipated that the awarding of door prizes, fine entertainment and well known speakers procured by Walter Meyer will all tend to make this banquet the best the Bridgeport Branch has ever held.

Communications were read and turned over to the Librarian.

The application of Steve Saba was received and turned over to the Board of Managers.

Unfinished Business, none. All bills against the Branch were ordered paid. The treasurer's report was read and accepted.

A dinner followed a lecture given by Mr. Leo Miller, who with the use of lantern slides told of his adventures through South American Wilderness, and gave many interesting experiences of his travels with Theodore Roosevelt and the Expedition to the River of Doubt. After the lecture Mr. Miller answered questions put to him by members present and a round table discussion was held.

Mr. Meyer announced that an open meeting would be held on February 18, when there would be two well known speakers.

WILLIAM FLAHERTY, *Sec.*

## *BOSTON BRANCH*

Boston Branch met Thursday the 3rd at the Bradford Hotel with President Mintie in the chair.

Minutes of the previous meeting were read and approved.

Communications were read and placed on file, bills read and paid. Bert Sage spoke of the Research Committee meeting held in Boston, Jan. 25th, as a great success. Some sixty-five sat down to dinner. After this, the business session. The speakers were Dr. Blum, George Hogaboom, and William M. Phillips, and their subjects were very interesting. Now, the point is, this research committee needs help and if the members will co-operate with them they will be able to continue the good work they have started. By this we mean, your employer can help by contributing to this fund. Get in touch with him and keep the ball rolling.

The President made a report on the meeting of Providence Branch January 21st. Boston Branch had eight members there, and we hope that it helped to bring a new spirit to the Branch.

Motion was made that a committee of three be named to rewrite the amendment that was presented at the last convention and be presented at the convention at Milwaukee in June. Bert Sage is the chairman.

The Banquet Committee reported that they are working hard and that the whole program will be the best yet.

The Chair was turned over to the librarian, Bert Sage, and he had as the speaker of the evening one of our own members Mr. Charles E. Barber of the Oakite Company. His subject was "The cleaning of metals to be finished." Some time ago the members were asking why we didn't have more talks on cleaners. Well, here was one

talk on cleaners that those that didn't attend, missed. It was one of the best we have had in a long time and by one man that can explain and answer all questions for you. He brought out some interesting facts about cleaners that many of the members never heard of, and what effect different racks have that contain solutions of different kinds that pass through the cleaners. Well, this was only one of the facts that every member should have heard. He was given a rising vote of thanks for his very interesting talk after which he answered all questions for the members. He also passed around the Oakite News Service. This will give you some very valuable information. Meeting adjourned at 10:20 p.m.

A. W. GARRETT, *Sec.*

## *NEWARK BRANCH*

The regular meeting of the Newark Branch A.E.S. was held on Friday evening, January 21st at the Krueger Club, Belmont and Springfield Aves., Newark, N. J.

Under reports of committees, Mr. Horace Smith, General Chairman of the 1939 Convention Committee, stated that he had received a letter from our Executive Secretary, Mr. William J. R. Kennedy, informing Newark Branch that the result of the referendum vote was overwhelmingly in favor of granting Newark's request for Exhibits for the 1939 International Convention at Asbury Park. Newark Branch takes this opportunity to thank all the branches for their co-operation.

Mr. Horace Smith and Mr. George Wagner as a committee were instructed to investigate meeting rooms at the Newark Athletic Club, as it was the opinion of some of the members that the club would be an ideal place for our meetings.

Mr. Smith also reported that Mr. Thomas Haddow, who is a very active member in our Branch, had lost his son through an accidental death. Newark Branch expresses its deepest sympathy.

The speakers of the evening were Mr. George Hogaboom of Hanson Van Winkle-Munning Co. and Mr. Andrew Wesley of International Nickel Co. Mr. Wesley spoke on Productions and Uses of Heavy Nickel Deposits and the difference of hardness in Nickel Deposits. Mr. Hogaboom spoke on The pH of Alkaline Plating Solutions and how pH was brought about. Both talks were very interesting and instructive and were accompanied by stereoptican slides. They will be published in THE MONTHLY REVIEW at a future date.

Meeting adjourned at 11:45 p.m., and was followed with refreshments.

GEORGE WAGNER, *Sec.*

## *NEW YORK BRANCH*

The New York Branch held two scheduled meetings during the month of January. These meetings were featured from an Educational standpoint by the appearance of two well known lecturers of the East who have not favored a New York Branch meeting for several years.

On Friday, January 14th, Mr. Albert Hirsch, past president of Philadelphia Branch and a member of the A.E.S. Research Committee, presented a paper on the subject of "The Effect of Sodium Cyanide, Sodium Carbonate and Rochelle Salt on the Cathode Efficiency of a Copper Electroplating Solution." Mr. Hirsch illustrated his talk with lantern slides and gave facts and figures relative to the effect of these various constituents on the deposit. His topic was received with

interest and evoked favorable comment and many questions. Mr. Hirsch was extended a vote of thanks by the New York group for his effort. The Philadelphia Branch sent a body guard with Mr. Hirsch, led by big George Gehling, past supreme president of the A.E.S. and Fred Fulforth, the vice-president of the Branch. Mr. Gehling and Mr. Fulforth were called upon for some remarks which they made to the interest of all.

On Wednesday, January 26th, a special meeting was held to welcome Dr. Blum of the U. S. Bureau of Standards on the way back from his Boston engagement. While Dr. Blum's subject was "The Specification and Testing of Electroplated Coatings," the Doctor was asked to preface his lecture with a talk on the work of the National Research Committee, its program and the estimated value to the average plater of the work being done at the U. S. Bureau of Standards and the A.E.S. connection with it. At this point President Liguori of New York recognized and called upon Mr. George B. Hogaboom of the Hanson-Van Winkle Company and first president of the A.E.S., who had made the trip from Boston with Dr. Blum and accompanied him to the New York meeting, to preside for the rest of the meeting. Dr. Blum spoke lengthily on both subjects and did justice to them. His talk was followed by a fulsome discussion on both topics after which he was tendered a rising vote of thanks by those present. Mr. Hogaboom followed with some remarks on the surfacing of steel stock for plated coatings. It was a good meeting with a high interest shown and productive of a better understanding of the relative subjects. Adjournment was had at 11:15 p.m.

F. J. MacStoker, *Sec.*

## *ROCHESTER BRANCH*

The Rochester Branch held its regular monthly meeting as a dinner meeting at the Rochester Liederkranz Club on Friday night January 21. The meeting was very well attended. After the dinner President Kohlmeier called the meeting to order for a short business session during the course of which the Chairman for the Annual Meeting, Mr. Ray DelRosso, announced that the annual meeting is to be held on April 30, instead of April 23. The following applications were then read and ordered published: Mr. Charles P. Wake, 319 Ellicott Street, Rochester, N. Y., active; Mr. Francis Patrick Dougherty, 62 Russell Street, Rochester, N. Y., active. The president then introduced Mr. S. P. Gartland who in turn introduced the guest speaker of the evening, Mr. John J. Desmond, Chief Chemist of the Delco Appliance Division of the General Motors Corporation in Rochester, whose topic was "Zinc Plating for Corrosion Resistance."

The speaker prefaced his talk by stating that all the work done for his paper was taken from work done at the Delco plant. He emphasized the protective value afforded iron and steel against atmospheric corrosion by zinc and cadmium electrodeposits. Curves for a number of zinc cyanide solutions were shown in which the ratio of the various ingredients were varied and the cathode efficiencies plotted against current densities over the range of 2.5 to 70.0 amperes per square foot. On inspection the curves showed a wide variation in the cathode efficiencies and through the use of these graphs the most suitable solution may be selected.

A chart was also shown that is used

for zinc barrel plating. Pounds per load are plotted against square feet per pound of work to be plated, on logarithmic paper, the diagonal lines express ampere hours. By reference to this chart the ampere hours required to plate any load any specified thickness may be obtained. The use of the chart as indicated makes it possible to meet specifications for barrel plating 100%. It was pointed out that the plating efficiency of the barrel as well as solution should be considered and known. The speaker expressed a desire and need for more rapid barrel plating equipment than is now available.

*Q.*—Mr. Frank Kolb: *What type of rack do you use in your work?*

Ans.—Brass or copper rubber covered.

*Q.*—Mr. Berghold: *Did you ever try plating Cadmium and zinc from a cyanide solution? If so what were the results?*

Ans.—Yes; used Cd. and Zn. solution using anodes with 25% Cd., 75% Zn. Results not so good. Also used Zn, and Mercury anode but ran into trouble.

*Q.*—Mr. Herndershot: *Are all your solutions kept under laboratory control?*

Ans.—Used to analyze all solutions once a week. Think poor practice not to have laboratory control.

*Q.*—Mr. Boehm: *In barrel plating is control of R.P.M. taken into consideration?*

Ans.—We used a constant.

After various other questions Mr. Desmond was given a rising vote of thanks for a splendid talk.

JUDSON ELSTER, *Sec.*

## DAYTON BRANCH

The members of the Dayton Branch met on Friday, February 4th, at the Engineers Club.

Mr. Conley appointed Mr. Wm. Wise to abstract articles for the MONTHLY REVIEW.

Five applications for membership were read and voted to take the usual course.

The meeting was very well attended and the increase in attendance in the last several months is evidence of the growing interest in the Society and its activities.

Mr. Conley told the members of the need for increased advertising in the REVIEW and asked for all possible assistance in promoting such advertising.

He also spoke of the membership campaign and welcomed the men who were attending their first electroplaters meeting. Several of these men were from plants never before represented at our meetings.

At this time Mr. Conley introduced Mr. Geo. Hogaboom who gave his paper on "The pH of Alkaline Solutions."

This paper was awarded the Proctor Award at the 1937 Convention and those present were very much impressed with the importance of controlling the pH to maintain high efficiencies in an alkaline plating bath.

This paper was published in THE MONTHLY REVIEW, although some of the members apparently had saved some questions until this time. Mr. Hogaboom was complete master of the situation.

At the close of this period Mr. Hogaboom was given a rising vote of thanks.

There were fifty-six members and guests present for this meeting and this increase in attendance and the number of new men who are attending, is very encouraging to the officers and members of our membership committee.

CORLISS W. POWELL, *Sec.*

## *DETROIT BRANCH*

The regular meeting of Detroit Branch was held in Hotel Statler, Friday evening, Februray 4th, at 8 o'clock. Mr. A. B. Wilson presided. There were 90 men in attendance. The minutes of the previous meeting were read and approved.

Reports of committees were given. Mr. B. F. Lewis gave an idea of what he was doing regarding exhibits for Detroit Branch at the coming Convention. He also appointed as members on the Committee with him Mr. W. Phillips, Mr. James Higgins, Mr. Carl Heussner. Detroit Branch should have as good if not a better exhibit than they had at the last Convention with this Committee working.

There were several letters read and the secretary was given instructions to answer same. One was from Mr. Ray Goodsell of the Milwaukee Branch. One was from Mr. MacStoker on the new membership drive.

We received a transfer of George W. Walter of the Pittsburgh Branch as an associate member. His address is 13005 Hillview Avenue, Detroit.

Mr. Wilson, our president, gave a little talk to the members on our new membership drive and stressed the fact that if we wish to keep up our reputation in this regard we have to do better than we have been because we only have 2 more months before the end of the fiscal year.

He also tried to impress the members that they are agents for the MONTHLY REVIEW, especially in the advertising part of it and that they are to work to get more advertisers. This is a very important matter and it should be the duty of each member to see that the people with whom they do business in supplies and equipment are advertised in the REVIEW.

We then had the speaker of the evening introduced by Mr. Wilson. The speaker was Dr. Junius D. Edward, assistant director of research, Aluminum Company of America, and his subject was "Big Jobs for Thin Films." This, of course, was quite a paper and he was well acquainted with the subject. He also made some demonstrations to show how some of these films were operated and what they did. It was very interesting and very educational. While it was not exactly plating, it was treating aluminum in various finishes and belongs to the polishing and plating trade. After he finished his paper there were quite a few questions asked, and were answered by him. The Question Box was taken charge of by acting librarian B. F. Lewis and there were many questions. The discussion brought out in the answering of these questions was also very interesting and educational. These questions and answers will be published in the REVIEW.

There being no further business to come before the meeting, it was adjourned at 10 o'clock.

T. C. EICHSTAEDT, *Sec.-Treas.*

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## *Research Department*

Boston Branch, A.E.S., held a meeting in the interests of Research at the Bradford Hotel on Tuesday Evening, January 25, for the purpose of making the manufacturers and others in Boston and vicinity better acquainted with the work being done at the Bureau of Standards through Dr. Blum and our Research Associate, Mr. Paul Strausser.

Bert Sage, the live wire member of the Committee, had charge of arrangements. The attendance passed expectations, so much so that extra tables were necessary to seat the guests. A turkey supper was served, after which Chairman W. M. Phillips of General Motors Corp. Detroit, took charge of the meeting. This was similar in character to the fine meeting held at Temple University, Philadelphia, a few weeks ago under the leadership of Mr. Hirsch at which time Dr. Blum was the speaker.

Mr. Phillips, in his address, gave some very interesting facts concerning the work of the committee, the amount of money spent to carry on the work, the projects successfully completed, and the work now in progress at the Bureau.

After hearty applause, the chairman introduced Dr. Blum who, with the use of the lantern, gave a very clear and convincing picture of the value of Research to Industry, touching on types of research, the cost and value of research, and giving examples of research in plating, such as the exposure and laboratory tests on nickel, chromium, zinc, and cadmium on steel. Dr. Blum also referred to the research in testing equipment, such as the drop test, the N.B.F. Jet Test, and Chord Method, and Brenners Magnetic Test, all of which are extremely useful in their own particular field as a means of determining thickness of deposits.

Mr. George B. Hogaboom gave a most interesting talk on the value of Research in electroplating. He contrasted old time plating methods with those of today pointing out the value of research in the development of nickel, chrome, iron, zinc, galvanizing tin, etc. Even cleaning metals in steel factories has been the subject of research with the result that improved surfaces are now specified by manufacturers as they order their supplies from the steel mills. Vastly improved plating room equipment and tank control are also the direct result of research.

Both Dr. Blum and Mr. Hogaboom got a good round of applause at the conclusion of their remarks.

Mr. Sage said as the meeting closed that a committee would solicit funds from the various industrial concerns for financial support to carry on the work being done at the Bureau.

President Mintie and Joe Barron gave everyone present an invitation to attend the Boston Branch Educational Session and Banquet on February 26 at the Bradford Hotel. There will be a special program for the ladies in the afternoon.

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# The Abstract Section

R. M. GOODSELL, *Chairman, Program and Educational Committee*

**Commercial Methods of Stripping, (Chromium, Nickel, and Copper).** C. F. FRANCIS-CARTER, *J. Electrodepositors' Tech. Soc.*, **14,** preprint, 1937—Methods are described for stripping used or defective coatings with the minimum attack of the basis metal. The principal recommended methods are as follows: (1) Chromium from nickel, by immersion in 10% hydrochloric acid (by volume) at 120 to 175°F. (2) Chromium from steel, by reverse current at 75 amp/ft$^2$ in sodium hydroxide, 7 oz/gal; or in sodium carbonate, 9 oz/gal, at room temperature. (3) Nickel from aluminum, brass, bronze, steel, cast-iron and zinc alloys, by reverse current at 50 to 100 amp/ft$^2$, in sulphuric acid 67 to 78% by weight, sp. g. 1.58 to 1.70, at room temperature. (4) Nickel from brass by reverse current in 5 percent hydrochloric acid (by vol.) at room temperature. (5) Copper from steel by immersion in a cold solution containing 64 oz/gal of chromic acid and 7 oz/gal of sulphuric acid.

W. BLUM.

**The Electrochemistry of Protective Coatings.** T. P. HOAR, *J. Electrodepositors' Tech. Soc.*, **14,** preprint, 1937—The factors involved in the protective action of either active ("anodic") coatings, or noble ("cathodic") coatings are discussed in terms of the electrode potentials and polarizations involved. Methods for detecting pores in coatings are suggested.

W. BLUM.

**The Electrodeposition of Copper on Aluminum Previously Oxidized by Chemical Means.** (Die Galvanische Abscheidung von Kupfer auf Aluminium Nach Vorausgegangener Chemischer Oxydation). Von WERNER HELLING und HEINRICH NEUNZIG. *Aluminium*, May 1937—Numerous methods have been developed for treating aluminum surfaces previous to the electrodeposition of metals. These treatments have included the cleaning of the metal, the removal of existent oxide layers, the creation of a rough surface for anchorage of the deposits and in some cases, the deposition of an intermediate metallic layer such as zinc or iron. In contrast to this procedure, methods have been developed which embody an electrochemical oxidation to artificially strengthen the oxide film. The oxide film is loosened in the alkaline solution thus creating a skeleton type of foundation upon which the metal being deposited firmly anchored itself. The method reported by the above authors consists of a chemical oxidation followed by deposition of copper from an acid solution. The sequence is as follows:

(1) Clean in cold 10% caustic soda solution (10 minutes) and neutralize in 2% hydrochloric solution.

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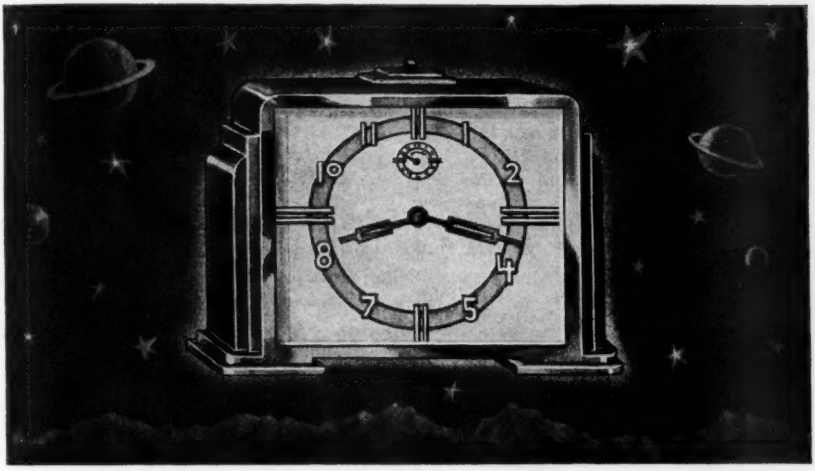

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(2) Immerse 15 minutes in a hot mixture of sodium carbonate and sodium monochromate or sodium vanadate followed by rinsing in cold water.

(3) Copper plate in the following solution:

| | |
|---|---|
| Copper Sulfate | 150 g/l |
| Sulfuric Acid (65%) | 60 g/l |
| Gelatine | .01-1 g/l |
| Current Density | 10-11 amps/ft$^2$ |
| Time | 60-90 min. |
| Temperature | 20-25°C. |

In the acid electrolyte, the protective coating is removed laterally from the pores. Simultaneously with the removal of the protective coating from the base metal, a deposition of copper occurs, thus preventing the formation of a new oxide layer. The deposits therefore showed extraordinarily low electrical contact resistances with the aluminum. A slight porosity of the oxidized protective coating is required for a uniform deposition of copper. This was shown to be true by the formation of rough deposits of copper on aluminum when the oxidized layer was treated with boiling water to close the pores. The adhesion of the copper to the base metal was shown to be excellent by the absence of exfoliation under the erichsen cup test, and upon hammering or bending. Samples could also be heated to 400°C. and cooled in the air without blistering. The alloys which could be coppered most satisfactorily were Pantal, Mangal, and Silumin, wheras the adhesion upon Duralumin was not as satisfactory because Duralumin does not form a satisfactory layer in the oxidizing solution. The electrical contact resistances were measured by forming a column of copper plated aluminum discs and passing a current through this column. The contact resistance was noticeably higher if the copper solution contained gelatine and hence, if the copper plating is to be done for low contact resistance, no gelatine should be used in the copper plating solution. The porosity of the copper layer is strongly dependent upon the nature of the base metal; namely, upon its chemical composition, heat treatment and method of rolling. Aluminum alloys containing silicon are satisfactory if the silicon is in solid solution or in a finely dispersed state, but if the silicon has coagulated, quite unfavorable deposits are produced. It is recommended, therefore, that if good protection against corrosive atmosphere is desired, a coating of colorless lacquer should be applied over the copper coating. No mention was made of the suitability of the copper coating for subsequent deposition of other coatings such as nickel but if the copper coating is properly applied it should be a good ground for further deposition.

The above-mentioned process is quite unique in that an acid copper solution is used which ordinarily would be quite unsuitable for deposition upon aluminum. The coating of oxide however, prevents the reaction between the aluminum and the copper solution and an adherent coating of copper can be deposited as soon as the oxide has been removed, thus preventing the formation of a spongy undercoating. A skeleton type of structure results due to the progressive lateral building of the copper deposits from the pores in the oxide layer. WALTER R. MEYER.

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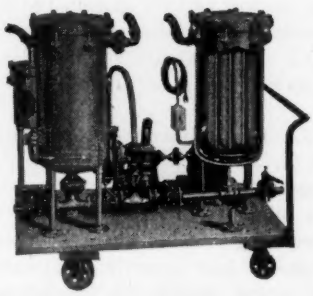

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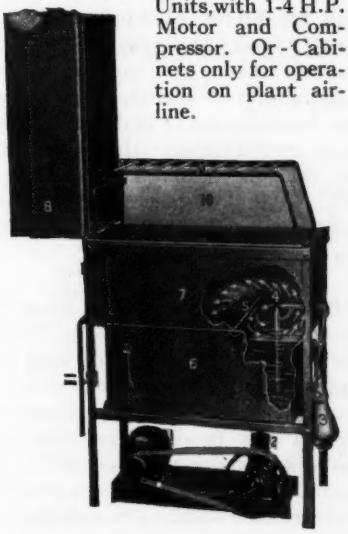

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**1. Differences Between Structure of Electrodeposited and Hot Dipped Coatings.** D. J. MacNAUGHTON, *Chemistry and Industry*, Vol. **56,** Oct. 2, 1937, pp. 875-883—Differences between plated and hot dipped tin and zinc coatings on iron, as revealed by X-ray diffraction and electron diffraction methods, are discussed in detail and illustrated by micrographs. Theories for differences are discussed in the light of present available knowledge.

**2. Chromium Plating from Non-Chromic Acid Solutions with Chromium Anodes.** M. SCHLÖTTER, *Sheet Metal Ind.*, Vol. **II,** Aug. 1937, pp. 721-22—Original research. Chrome anodes are produced by melting electrolytic and thermit-produced chrome in vacuum. To maintain the anodic solution of chromium in the trivalent form A.C. is superimposed on D.C. Principal advantage of chromium salt solution over chromic acid type is its non-poisonous and non-corrosive nature.

**3. The Behavoir of Lead in Nickel Baths.** E. RAUB and M. WHITTUM, *Korrosion and Metallschutz*, Vol. **13,** Aug. 1937, pp. 261-66—Original research on solubility and effects of lead in nickel plating baths. In general, the solubility of lead from tank linings is small, but can be high in baths containing citrates where it depends on pH and temperature of the bath. Dissolved lead is partly precipitated as lead sulfate. Lead is deposited with the nickel, causing the deposit to become finer grained and brighter with increasing lead content. However, deposits tend to become brittle and have a tendency to spall.

**4. Hard Chromium Plating and its Fields of Application.** K. GEBAUER, *Korrosion and Metallschutz*, August, 1937, pp. 269-74—Hard chrome is chrome deposited at high current density and bath temperature without an intermediary layer in a thickness of 1-40 micron. The hardness varies between 65-70 Rockwell C. Great hardness said to be due to hydrogen content of deposit and also to distortion of crystal lattice. Heating to 300°C removes hydrogen without appreciably changing hardness. The hardness decreases only after heating above 500°C. Wear resistance of hard chrome is especially high for gliding friction, but hardness should not be above 60-62 Rockwell C. Rolling friction requires a harder deposit.

**5. Barrel Finishing of Metal Products.** H. LEROY BEAVER. Article No. 12 on "Choice of Steel", *Product Finishing*, Jan. 1938, pp. 22-24—Article emphasizes importance of choice of kind of finish on strip steel used for stampings in cost of finishing. Quotes actual figures to prove that high finish strip is actually cheaper than ordinary strip due to lowered polishing costs. Recommends No. 3 finish strip steel now furnished by steel companies. Has high gloss finish which is protected by oil or oil and paper. Paper can stay on during punch press operations, thus cutting down scratches. Hardness of 45-55 Rockwell B is recommended. Grain size is important especially for hard draws. Finer grain best for bends and draws. Advice is sound and very useful.

PHIL J. RITZENTHALER.

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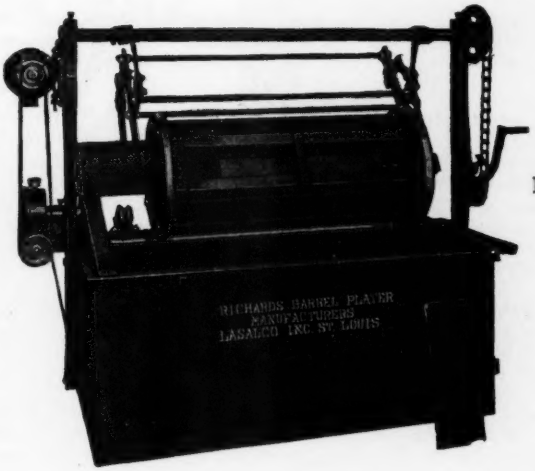


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# *Here and There*

Our good friend and member, Wilfred S. McKeon, President of Sulphur Products Co., was one of the group of small business men called to Washington for a conference with President Roosevelt on business conditions.

We had a fine meeting in Providence January 21st. There was a good representation from Boston Branch including President Arthur Mintie, Vice President Ed Delarm, Secretary Andrew Garrett, Bert Sage, Harry Lack and others. We were mighty glad to see President Charles Chace in the chair again after a period of illness. Several new faces were noticed, including a number of young men who seemed very much interested in the work of the A.E.S. We expect a lot from Providence Branch in the near future. Four applications were received. There was an attendance of 32.

## NEWARK AND ROCHESTER ANNUAL MEETINGS

Please keep these days in mind. Newark will hold its Annual Educational Session and Banquet on Saturday, April 23; Rochester will hold its Annual Meeting and Banquet on Saturday, April 30.

Since the Philadelphia and Boston Branches have held such successful meetings in connection with Research, we believe it would be advisable to hold meetings of a similar character in other sections of the country. How about a big meeting in Connecticut? It is our belief that Mr. T. Chamberlain and Mr. Joe Downes could make such a meeting successful and profitable.

By the way, New Haven has just turned in eighteen new elections. Philadelphia has given us eight. Fine work. Let's hear from all our other branches.

Mr. Phillips, Chairman of the Research Committee, will speak to platers and manufacturers in Montreal on February 14th. Mr. John Cronin, the Secretary, assures us that there will be a good attendance.

Mr. Hermansen, Secretary of Milwaukee Branch, gives us the ritual used in declaring candidates elected to branch membership. Most of our branches could profit by a similar procedure, as it seems to us that we do not give the newly elected members that warm feeling which lingers with them and makes them anxious to attend the regular meetings each month.

"Do you promise and are you willing to obey and conform to the Laws and By-Laws of this Society, and to promote the welfare and advancement of the same? Are you willing to assist your fellow craftsman with your knowledge and experience and unselfishly render them service when called upon to do so? (Candidate answers.)

In return, the Society offers you the contact and association with a body of men, who, as unselfishly as you, are willing to aid and assist their fellow members in promoting the advancement and science of Electro Deposition and Finishing of Metals.

Let us, therefore, impress upon you, the importance of any duties to which you may be assigned. The progress of our Society rests solely on those who are willing and cheerfully offer their services. By attending meetings regularly you will show your interest in the work. This will in a measure assist the officers of the Branch in performing their duties for the benefit of the membership. Accordingly, you are now accepted as a member of the American Electroplaters' Society and entitled to all its rights and privileges."

Mr. Herman has been appointed by the Chairman of the Milwaukee Convention Committee as Chairman of Hotels and Reservations to take the place of Mr. Claude A. Terrill who recently passed away.

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## WESLEY F. HALL

They say that no man is a hero to his valet. By the same token, it is equally difficult for a man to be a hero to his associates. However, Wesley F. Hall of the Hanson-Van Winkle-Munning Company, Matawan, N. J., manufacturers of electroplating equipment and supplies, is a prominent exception to this rule. He is known in his Company as "the crazy inventor" who has done more than anyone living for the development of automatic machinery in the electroplating industry.

Wesley F. Hall who was born about 61 years ago, is self-educated. Due to poor health as a boy he was unable to attend school. However, by himself he acquired a training equivalent to an engineering degree. From early youth he gave evidence of a keen understanding of mechanics and engineering problems.

Mr. Hall's first experience in industry was in the shoe machinery field. Later he pioneered in marine gasoline engine design. He then went with the old Munning and Loeb Company (which later became the A. P. Munning Co., and afterward merged with the Hanson and Van Winkle Co., to become the Hanson-Van Winkle-Munning Company) first as a designing engineer. An early job was the design of the Optimus plating barrel. Then he acted as superintendent of the plant. When the merger took place in 1927 he was designated Chief Designing Engineer. One of his outstanding designs was the standard full automatic plating conveyor.

Mr. Hall is known in his Company as "the brains of the mechanical department." But he has one great defect. He cannot be dragged into the lime-light. It took a Herculean effort to get him here!

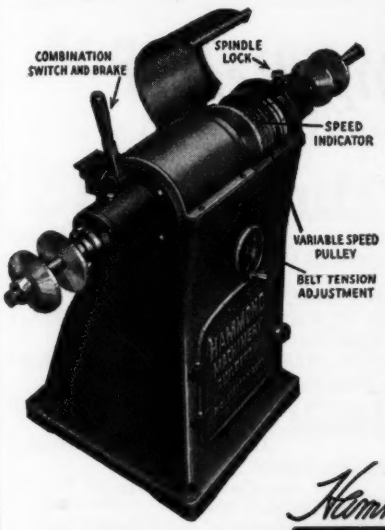
---

## MR. WALTER ROWE IS RECOVERING

His many friends will be glad to know that Walter W. Rowe, well known electroplater at North & Judd Mfg. Co., New Britain, is recovering at his home from a very serious heart attack. We wish Mr. Rowe a speedy and complete recovery.

---

Mr. Albert Hirsch, a member of the Research Committee and an active member of the Philadelphia Branch, A.E.S., has joined the organization of Snyder, Inc., automotive and radio specialties manufacturers, Noble and Darien Sts., Philadelphia, Pa., where electroplating "Significant Surfaces" for thickness of coating is a specialty.

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*To February 1, 1938*

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Clarence W. Smith, Philco Radio & Television Corp., Tioga & C Sts., Philadelphia, Pa. Active, Philadelphia Branch

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Irving Rosenfeld, 1273 Bedford Ave., Brooklyn, N. Y.
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Norman L. Goodwin, 1610 Ottawa St., Walkerville, Ontario, Canada
Active, Detroit Branch
W. S. Loose, Dow Chemical Co., Midland, Mich. Associate, Detroit Branch
Herman Alvin Dorward, 1708 Mackin Rd., Flint, Mich.
Active, Detroit Branch
Walter E. Charlton, 144 S. Navahoe, Detroit, Mich.
Associate, Detroit Branch
Max Weinberg, Parker Wolverine Co., 2177 E. Milwaukee, Wis.
Associate, Detroit Branch
Stanely Sharman, c/o Wurlitzer Co., No. Tonawanda, N. Y.
Active, Buffalo Branch
John D. Elnor, 836 Kensington Ave., Buffalo, N. Y.
Active, Buffalo Branch
Harvey Slatin, 263 Ashland Ave., Buffalo, N. Y.
Associate, Buffalo Branch
Ralph T. Mead, 19 Doat St., Buffalo, N. Y. Associate, Buffalo Branch
D. L. Ripley, 427 Olympic Ave., Buffalo, N. Y. Associate, Buffalo Branch
Alfred J. Boy, 84 Verplanch St., Buffalo, N. Y. Active, Buffalo Branch
Joseph Genco, Trico Products Corp., Buffalo, N. Y. Active, Buffalo Branch
Geo. H. Ambellan, 151 Amber St., Buffalo, N. Y. Active, Buffalo Branch
Louis Nowakowski, Trico Prod. Corp., Buffalo, N. Y. Active, Buffalo Branch
Kenneth P. Kester, 413 Gilmore Ave., Olean N. Y. Active, Buffalo Branch
Roderick McGhee, 208 Millicent Ave., Buffalo, N. Y. Buffalo Branch
George F. Nowojski, Intern'l Railway Co., Main & Michigan, Buffalo, N. Y. Active, Buffalo Branch
Michael J. Kibler, 78 Mapleridge Ave., Buffalo, N. Y. Buffalo Branch
Lorne Elsmer Davey, 107 Crowley Ave., Buffalo, N. Y.
Active, Buffalo Branch
William J. Van Dyke, 270 W. 20th St., Holland, Michigan
Active, Grand Rapids Branch
Barnard Case, Eton Detroit Metal Products Co., 755 East 140 St., Cleveland, Ohio Associate, Cleveland Branch

## APPLICATIONS

Edward J. Nolde, 97 Trowbridge Place, Naugatuck, Conn.
Active, Waterbury Branch
Morris M. Messing, 2416 Newkirk Ave., Brooklyn, N. Y.
Associate, Newark Branch
Ralph H. McCann, E. I. DuPont de Nemours & Co., Electroplating Division, New York City Associate, New York Branch
Harry N. Kopple, Parker Chem. Prod. Corp., Conshohocken, Pa.
Associate, Buffalo Branch
Fred H. Holkin, 144 Kingsley St., Buffalo, N. Y. Associate Buffalo Branch
Harold A. Day, 1483 Niagara St., Buffalo, N. Y. Associate, Buffalo Branch
J. Clark Ryan, Colonial Radio Corp., 254 Rano St., Buffalo, N. Y.
Associate, Buffalo Branch

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"THE SWEETNESS OF LOW PRICES NEVER EQUALS THE BITTERNESS OF POOR QUALITY"—*Genesee Valley Buyer*

The above are not the words of a salesman as one might suspect them to be. They are quoted from the official organ of a group of PURCHASING AGENTS.

QUALITY First
SERVICE Second
PRICE Consistent With What We Offer

MATCHLESS HIGH GRADE
BUFFING COMPOSITIONS
BUFFS and
POLISHING WHEELS

There is no substitute for "MATCHLESS"

THE
MATCHLESS METAL POLISH CO.

840 W. 49th Pl. Chicago, Ill.
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COMPLETELY EQUIPPED
POLISHING AND PLATING PLANT
*for Sale*

Located Northwestern Ohio
Labor Conditions Good

Satisfactory Building Lease Obtainable.

Operating Capacity of 45 Employees

Or will also dispose of Equipment separately.

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PURICO
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*Pre-Saponified Compositions for Buffing and Polishing*

Satisfy the most particular users.

Ideal for use on pierced, grooved, and filigreed work because it is pre-saponified, and washes absolutely clean, faster and without scrubbing.

REDUCES { Time / Expense / Rejections

Divine Brothers Company

Utica, N. Y., U. S. A.

STAINLESS STEEL POLISHING COMPOUNDS of QUALITY—first, last and always.

Why do we hold our customers year in and year out? Quality and price must be right, — and satisfactory service.

4A

The new numbers for buffing and cutting down stainless steels and other steels are going over big.
All we ask is the opportunity to serve you — the answer is then in your hands.

HARRISON & COMPANY
HAVERHILL, MASS.

"A PRODUCT FOR EVERY FINISH"

**SUSPENSIONS**

Paul R. Stamm, 9047 Elbon Rd., Cleveland, Ohio — Cleveland Branch
William J. Meister, 3350 Janett St., Toledo, Ohio — Toledo Branch
Arthur Brown, 11 Abbott St., Binghamton, N. Y. — Binghamton-Elmira Branch
Ray A. Austin, 5125 Horger, Dearborn, Michigan — Active, Detroit Branch
Claude Wieda, 1604 W. Leonard St., Grand Rapids, Michigan — Grand Rapids Branch

**DECEASED**

C. E. L'Hommedieu, 4521 Ogden Ave., Chicago, Ill. — Chicago Branch
Thomas W. Haddow, Pompton Plains, N. J. — Newark Branch
Roy Hunt, 402 So. 4th St., Milwaukee, Wis. — Milwaukee Branch

**TRANSFERS**

Warren A. Guy, Buffalo, N. Y. — From Rochester Branch to Buffalo Branch
Joseph Ruff, 163 Woodlawn Ave., Buffalo, N. Y. — From Rochester Branch to Buffalo Branch
William D. Hart, 237 Laird Ave., Buffalo, N. Y. — From Rochester Branch to Buffalo Branch

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## BELIEVE IT OR NOT!

### An Industrial Fish Story

Here's one for the book!

MR. FISH of the American Steel & Wire Company of Worcester, Mass., recently called MR. PIKE of the Hanson-VanWinkle-Munning Company, Matawan, New Jersey, who called MR. HERRING of the Hanson-Van Winkle-Munning Company of Pittsburgh, Pa., who called MR. TROUT of the Bethlehem Steel Company, Johnston, Pa., in order to make an appointment between MR. FISH and MR. TROUT.

The appointment was made, but who caught what and how big it was, nobody will ever find out!

According to C. W. Yerger, Vice President of the Hanson-Van Winkle-Munning Company, our authority for this story (and we all know how reliable he is), this "affair" did not happen on April 1st.

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## Spotting Out (A Cure?)

Have you a spotting-out problem to contend with? I believe that all of us have had this trouble at one time or another and still no definite progress has been made to eliminate it.

Although I am not guaranteeing my method to be 100% fool-proof for eliminating spotting-out, I have had very good results on dye castings that are finished in English Bronze; also on bronze castings that have been brass plated, buffed and lacquered.

The method is very simple and requires only a few minutes to complete the whole operation.

Before and after the articles are plated we run them through our degreaser, the average cleaning cycle, using trichlorethylene as the solvent. After the work has cooled, we buff and lacquer; or if it is to be oxidized, we follow through with our regular operations of scratch-brushing and dipping.

Before we adopted this method of finishing, our dye castings started spotting-out immediately after dipping.

This information I pass along to you in the hope that it will help you as it has helped us in solving our problem.

The writer would appreciate any information as to the results on other types of work.

Address: Robert B. Goodsell,
c/o Moe-Bridges Corporation,
Milwaukee, Wisconsin.

# PLATING EQUIPMENT

## That Can "Take It"

★ **MEAKER FULL AUTOMATICS**

**Plating and Processing Machines of All Types**

★ **MEAKER SEMI-AUTOMATIC**

★ **MEAKER-Electric Products Generators**

**Backed by over thirty-seven years' engineering experience in solving electro-plating problems for the industry.**

**THE MEAKER COMPANY**

**1629-41 S. 55th Ave. (Cicero Station) Chicago, Illinois**

## QUAKER CITY REMINDER FOR FEBRUARY, 1938

The January meeting was addressed by Dr. C. L. Mantell, who typically drew the platers over the coals for their failure to recognize causes for competition and do something about it.

Fortunately, in the Philadelphia Branch this condition has been recognized and offset as evidenced by our platers school, by John Nelson's Standard Plating installation of bright nickel which has allowed him and his associated firms to underbid on midwest automobile work for Philadelphia workers and also Paul Mentzel at Mitchell Specialty Company and Raymond Eckert at Fox Products Company both going out of their local territory to bring in work for our benefit.

There are many others who have developed improved methods for finishes and advanced procedures on new work who are rarely seen at regular meetings so that nothing is known of their value to the branch. Why can we not get better attendance from these members, especially when our speakers are of the best to be procured in their lines and always are instructed to give non-technical talks we can all understand? Is it the selection of the night, the location of the meeting place or what? How about some letters, signed or anonymous, to let the officers know exactly why meetings are not better attended?

Our past president, Mr. Albert Hirsch, read a paper before the New York Branch on the slippery, snowy evening of January 14 and in spite of the weather conditions, plus a rival Master Platers' smoker on the same evening, drew an attendance of forty-four as compared to Dr. Mantell's twenty-four present at Philadelphia.

Now, Mr. Hirsch will read this same paper at the February meeting and all may be assured it is worth an attendance of more than forty-four since to anyone using cyanide copper the Effect of Sodium Carbonate, Sodium Cyanide and Rochelle Salts on the Cathode Efficiencies of Copper Cyanide Electroplating Solutions, illustrated by lantern slides, is new, unpublished, original research work, told in a manner easy to understand while it behooves all of us to be prepared to answer questions about the new Rochelle Salt method.

If this were not sufficient inducement in itself, there will be other short papers prepared by members for branch approval to be read before the Supreme Society Convention while a suggestion has been made that the selected be read by the writer at branch expense to Milwaukee. If trade magazines consider these papers worth good money for publication rights, why not come and hear them free of charge?

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## MAAS & WALDSTEIN EXHIBIT AT HEATING AND VENTILATING SHOW

"Finishes engineered to the job" were exhibited by Maas & Waldstein Company, makers of industrial finishes, Newark, New Jersey, at the International Heating and Ventilating Exposition, held in New York in January.

The exhibit included air-conditioning units, oil heater jackets, and oil burners finished in M & W finishes specially designed to withstand the service conditions to which each of these products is subjected. Stress was laid on the parts played by good design, color, quality of finish, and wearing qualities in increasing manufacturers' sales.

B. D. Sanderson, sales manager of the company, was in charge of the M & W booth.

# NO REJECTS?

**That may be impossible but you will come closer to realizing this perfection if you use Harshaw Pure Anodes and Chemicals in your plating tanks..... Harshaw anodes and chemicals exceed by a wide margin, every commercial specification .... Harshaw plating materials are backed by experience, control, research and large capacity plants.**

**Speed up your production — materially decrease the number of rejects—use Harshaw plating materials—their extra purity will be to your advantage.**

## THE HARSHAW CHEMICAL CO.

**Manufacturers, Importers, Merchants**
**Offices and Laboratories: Cleveland, Ohio**
**Quality products since 1892**

**New York, Philadelphia, Chicago, Detroit, Pittsburgh, Cincinnati, East Liverpool, Los Angeles, San Francisco**
**Works at Cleveland and Elyria, Ohio and Philadelphia, Pa.**

## NOTE

Hammond Machinery Builders, Kalamazoo, Michigan, has found it necessary to move their Eastern Branch into larger quarters to take care of the increasing demand for Hammond Products in the East.

The new location is at 71 West 23rd Street, New York City (telephone GRamercy 5-6619) and provides more display space for their many popular machines, including several introduced within the past year.

Mr. W. J. Holtmeier, Eastern Manager, has plans underway to display in the New York Office several models of Polishing Lathes and Grinders for inspection. He has been with the Hammond Machinery Builders for ten years and is either directly or through dealers and other representatives serving all the Eastern States from North Carolina and Virginia north to Maine.

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## ELECTROPLATING EQUIPMENT AT THE CHEMICAL SHOW

To the electroplating industry, one of the most interesting displays of equipment at the Sixteenth Exposition of Chemical Industries, held December 6-11, 1937 at Grand Central Palace, New York, was shown by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. It was an electroplating rectifier assembled by the Hanson-Van Winkle-Munning Company, Matawan, N. J., incorporating Westinghouse units. These rectifiers which were placed on the market during the present year, represent a new source of direct current. They are copper oxide plate type rectifiers for converting alternating current into direct current for electroplating, offered to the industry in a wide range of sizes.

The outstanding features of this rectifier are:

1. Freedom from moving parts, eliminating the necessity for replacements and keeping maintenance costs at a minimum.
2. Practically no installation cost, by the elimination of labor and material charges for moving into position, foundations, erection, etc.
3. High, over-all efficiency and high power factor.

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## NUGLU IS HERE NOW

NUGLU, the abrasive bond which is superior to cement or glue. Not a glue, not a cement, but a true abrasive bond.

NUGLU is a prepared abrasive bond ready to use. You use it for setting up all kinds of polishing wheels, belts or discs with all or any size abrasives.

NUGLU stays the same consistency as when you receive it (in steel cans or drums) will not thicken.

NUGLU IS FREE FROM ALL HARMFUL IMPURITIES. IT DOES NOT CONTAIN EITHER SILICA OR ASBESTOS.

You can use NUGLU as you receive it — no heating or cooking required. The grain requires no heating either. Ready to use, no thinning necessary. Follow directions given.

NUGLU has the faster cut of cement plus the burnishing effect of glue. The cut is faster, hence a finer grain size should be used than you use with glue. Manufactured exclusively by J. J. Siefen Company, 1936 W. Lafayette Blvd., Detroit, Mich.

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## NEWS ITEM

The Lea Manufacturing Co., Waterbury, Conn., has been appointed by General Abrasive Company, Inc., Niagara Falls, N. Y., as its exclusive representative in Connecticut and Western Massachusetts for handling the sale of Lionite Polishing Grains. Complete stocks of all sizes will be carried in their warehouse at Waterbury.